添付資料

添付資料１　カンボジア工科大学（ITC）各学科カリキュラム

- Department of Electrical and Energy Engineering
- Department of Computer Science
- Department of Chemical and Food Engineering
- Department of Civil Engineering
- Department of Mechanical and Industrial Engineering
- Department of Geo-Resources and Geotechnological Engineering

(電)

電気カリキュラム (学士) ① EE (Electrical & Energy)

Curriculum for Electrical Engineering Option: EE

Number of Hours

Foundation Year	Year 1						Year 2						Year 3						Year 4						Year 5						16	32	32	TOTAL
	I			II			III			IV			V			VI			VII			VIII			IX			X			Subtotal			
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
French			128			128			96			128			32			64			32			32			32						672	672
English									32			64			64			32			32			32			32						288	288
History	32																														32			32
Philosophy	32																														32			32
Management and Accounting	48																														48			48
Marketing				32																											32			32
Geometry	16	32											16	32																	32	64		96
Calculus I				32	32																										32	32		64
Linear Algebra							32	32																							32	32		64
Calculus II							32	32																							32	32		64
Probability										32	32																				32	32		64
Mechanics	32	24	8																												32	24	8	64
Thermodynamics				32	24	8																									32	24	8	64
Electrokinetics							32	32																							32	32		64
Electromagnetics										32	24	8																			32	24	8	64
Optics and Waves										32	32																				32	32		64
Chimistry							32	32																							32	32		64
Environnement	32																														32			32
Technical Drawing				16	32																										16	32		48
Programming				16		32											32														16	32	32	80
Subtotal FY	192	56	136	128	88	168	128	128	128	96	88	200	16	32	96		32	96			64			64			64				560	424	1,016	2,000
Total FY	384			384			384			384			144			128			64			64			64						2,000			
SPECIALITIES	I			II			III			IV			V			VI			VII			VIII			IX			X						
Electrical Circuit Analysis and Analog Filters													32		16	16		16													48		32	80
Semiconductor Devices													32																		32			32
Analog Electronics													32	16	16																32	16	16	64
Digital Electronics													16	16	16																16	16	16	48
Electrical Machines and Equipments													16	16	16	16															32	16	16	64
Signals and Systems																32															32			32
Microprocessors																16	16	16													16	16	16	48
Control Theory																16	16	16													16	16	16	48
Power Electronics																16	16	16													16	16	16	48
Electrical Installation and Safty																32															32			32
Internship at the end of year 3																																		
Fluid Mechanics and Heat Transfer																			32												32			32
Materials Engineering																			32												32			32
Numerical Analysis and Optimizations																			16	16	16										16	16	16	48
Electrical Network Analysis																			32	16	16										32	16	16	64
Power Distribution																			32	16	16										32	16	16	64
Renewable Energy and Technology																			16	16	16										16	16	16	48
Power Plant																			32												32			32
Modeling and Simulation of Electrical Network																						16	16	16							16	16	16	48
Transient of Power System																						32	16	16							32	16	16	64
Power System Optimization																						32									32			32
Motor Drives																						16	16	16							16	16	16	48
Energy Storage																						32									32			32
Industrial Power Supply																						32									32			32
Economy and Projet Management for Engineering																						32	32								32	32		64
Internship at the end of year 4																																		
High Voltage																									32						32			32
Electromagnetic Compatibility																									16	16	16				16	16	16	48
Méthodes avancées pour la commande des moteurs électriques																									32						32			32
Energy and Environment																									32						32			32
Energy Efficiency																									16	32					16	32		48
Sustainable Energy																									32						32			32
Electricity Market																									32						32			32
Senior Project																											64						64	64
Intership for dissertation																																		
Total for specialities													128	48	64	144	48	64	192	64	64	192	80	48	192	48	80	0	0	0	848	288	320	1456
TOTAL													384			384			384			384			384						3,456			

Number of Credits

Foundation Year	Year 1						Year 2						Year 3						Year 4						Year 5						Total			TOTAL
	I			II			III			IV			V			VI			VII			VIII			IX			X						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
French			4			4			3			4			1			2			1			1			1						21	21
English									1			2			1			1			1			1			1						8	8
History	2																														2			2
Philosophy	2																														2			2
Management and Accounting	3																														3			3
Marketing				2																											2			2
Geometry	1	1											1	1																	2	2		4
Calculus I				2	1																										2	1		3
Linear Algebra							2	1																							2	1		3
Calculus II							2	1																							2	1		3
Probability										2	1																				2	1		3
Mechanics	2	0.8	0.3																												2	0.8	0.3	3.1
Thermodynamics				2	0.8	0.3																									2	0.8	0.3	3.1
Electrokinetics							2	1																							2	1		3
Electromagnetics										2	0.8	0.3																			2	0.8	0.3	3.1
Optics and Waves										2	1																				2	1		3
Chimistry							2	1																							2	1		3
Environnement	2																														2			2
Technical Drawing				1	1																										1	1		2
Programming				1		1											1														1	1	1	3
Subtotal FY	12	2	4	8	3	5	8	4	4	6	3	6	1	1	2	0	1	3	0	0	2	0	0	2	0	0	2	0	0	0	35	13	31	79
Total FY	18			16			16			15			4			4			2			2			2						79			
SPECIALITIES	I			II			III			IV			V			VI			VII			VIII			IX			X						Tot.
Electrical Circuit Analysis and Analog Filters													2	0	0.5	1	0	0.5													3		1	4
Semiconductor Devices													2	0	0																2			2
Analog Electronics													2	0.5	0.5																2	0.5	0.5	3
Digital Electronics													1	0.5	0.5																1	0.5	0.5	2
Electrical Machines and Equipments													1	0.5	0.5	1	0	0													2	0.5	0.5	3
Signals and Systems																2	0	0													2			2
Microprocessors																1	0.5	0.5													1	0.5	0.5	2
Control Theory																1	0.5	0.5													1	0.5	0.5	2
Power Electronics																1	0.5	0.5													1	0.5	0.5	2
Electrical Installation and Safty																2	0	0													2			2
Internship at the end of year 3																																		
Fluid Mechanics and Heat Transfer																			2	0	0										2			2
Materials Engineering																			2	0	0										2			2
Numerical Analysis and Optimizations																			1	0.5	0.5										1	0.5	0.5	2
Electrical Network Analysis																			2	0.5	0.5										2	0.5	0.5	3
Power Distribution																			2	0.5	0.5										2	0.5	0.5	3
Renewable Energy and Technology																			1	0.5	0.5										1	0.5	0.5	2
Power Plant																			2	0	0										2			2
Modeling and Simulation of Electrical Network																						1	0.5	0.5							1	0.5	0.5	2
Transient of Power System																						2	0.5	0.5							2	0.5	0.5	3
Power System Optimization																						2	0	0							2			2
Motor Drives																						1	0.5	0.5							1	0.5	0.5	2
Energy Storage																						2	0	0							2			2
Industrial Power Supply																						2	0	0							2			2
Economy and Projet Management for Engineering																						2	1	0							2	1		3
Internship at the end of year 4																																		
High Voltage																									2	0	0				2			2
Electromagnetic Compatibility																									1	0.5	0.5				1	0.5	0.5	2
Méthodes avancées pour la commande des moteurs électriques																									2	0	0				2			2
Energy and Environment																									2	0	0				2			2
Energy Efficiency																									1	1	0				1	1		2
Sustainable Energy																									2	0	0				2			2
Electricity Market																									2	0	0				2			2
Senior Project																									0	0	2						2	2
Intership for dissertation																												9			9			9
Total for specialities	0	0	0	0	0	0	0	0	0	0	0	0	8	1.5	2	9	1.5	2	12	2	2	12	2.5	1.5	12	1.5	2.5	9	0	0	62	9	10	81
TOTAL													15.50			16.50			18.00			18.00			18.00			9.00			160			

C: lessons. TD: assignments. TP: Practice @ workshop or lab.

EAT Electronic Automotive Telecommunicatio

Curriculum for Electrical Engineering option: EAT

Foundation Year

Number of Hours (cours, TD, TP)

	Year 1						Year 2						Year 3						Year 4						Year 5												TOTAL
	I			II			III			IV			V			VI			VII			VIII			IX			X			16	32	32				
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	Subtotal						
French			128			128			96			128			32			64			32			32								672			672
English									32			64			64			32			32			32								288			288
History	32																																			
Philosophy	32																																			
Management and Accou	48																																			
Marketing			32																																	
Geometry	16	32											16	32																						
Calculus I				32	32																															
Linear Algebra							32	32																												
Calculus II							32	32																												
Probability									32	32																										
Mechanics	32	24	8																																	
Thermodynamics				32	24	8																														
Electrokinetics							32	32																												
Electromagnetics									32	24	8																									
Optics and Waves									32	32																										
Chimistry							32	32																												
Environement	32																																			
Technical Drawing				16	32																															
Programming				16		32										32																					
Subtotal FY	192	56	136	128	88	168	128	128	128	96	88	200	16	32	96		32	96			64			64			64				560	424	1.016	2,000
Total FY	384			384			384			384			144			128			64			64			64			2,000							

Number of Credits

	Year 1						Year 2						Year 3						Year 4						Year 5						Total			TOTAL
	I			II			III			IV			V			VI			VII			VIII			IX			X						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
French			4			4			3			4			1			2			1			1			1						31	21
English									1			2			2			1			1			1			1						9	9
History	2																														2			2
Philosophy	2																														2			2
Management and Accou	3																														3			3
Marketing				2																											2			2
Geometry	1	1											1	1																	2	2		4
Calculus I				2	1																										2	1		3
Linear Algebra							2	1																							2	1		3
Calculus II							2	1																							2	1		3
Probability										2	1																				2	1		3
Mechanics	2	0.8	0.3																												2	0.8	0.3	3.1
Thermodynamics				2	0.8	0.3																									2	0.8	0.3	3.1
Electrokinetics							2	1																							2	1		3
Electromagnetics										2	0.8	0.3																			2	0.8	0.3	3.1
Optics and Waves										2	1																				2	1		3
Chimistry							2	1																							2	1		3
Environement	2																														2			2
Technical Drawing				1	1																										1	1		2
Programming				1		1										1															1	1	1	3
Subtotal FY	12	2	4	8	3	5	8	4	4	6	3	6	1	1	3	0	1	3	0	0	2	0	0	2	0	0	2	0	0	0	35	13	32	80
Total FY	18			16			16			15			5			4			2			2			2						80			

SPECIALITIES	I			II			III			IV			V			VI			VII			VIII			IX			X							Tot.
Electrical Circuit Analysis and Analog Filters													32		16	16		16													48		32	80
Semiconductor Devices													32																		32			32
Analog Electronics													32	16	16																32	16	16	64
Digital Electronics													16	16	16																16	16	16	48
Electrical Machines and Equipments													16	16	16	16															32	16	16	64
Signals and Systems																32															32			32
Microprocessors																16	16	16													16	16	16	48
Feedback Control																16	16	16													16	16	16	48
Power Electronics																16	16	16													16	16	16	48
Electrical Installation and Safty																32															32			32
Internship at the end of year3																																			
Sensors and Actuators																			16	16	16										16	16	16	48
Digital Signal Processing																			16	16	16										16	16	16	48
Analog Communications																			16	16	16										16	16	16	48
Multivariable Control																			16	16	16										16	16	16	48
VHDL and FPGA																			16		32										16		32	48
Random Process																			32												32			32
Numerical Analysis and Optimization																			48												48			48
Information Theory and Coding																						16	16	16							16	16	16	48
Robotics																						32									32			32
Transmission and Swiching																						16	16	16							16	16	16	48
Microwave																						32									32			32
Propagation of Electromagnetic Waves																						32									32			32
Digital Communications																						16	16	16							16	16	16	48
Wireless and Mobile Communication																						16	16	16							16	16	16	48
Industrial Informatics																						32									32			32
Internship at the end of year4																																			
Broadband Technology																						32									32			32
Telecommunication Systems																						32	16	16							32	16	16	64
Nanoelectronics																						32									32			32
Data Communications																						16		32							16		32	48
Optical Communication																						16	16	16							16	16	16	48
Project Management for Engineering																						32									32			32
Senior Project																							64									64		64
Internship for dissertation																																			
Total for specialities													128	48	64	144	48	64	160	64	96	192	64	64	160	32	128	0	0	0	784	256	416	1456
TOTAL													384			384			384			384			384			3,456							

SPECIALITIES	I			II			III			IV			V			VI			VII			VIII			IX			X							Tot.
Electrical Circuit Analysis and Analog Filters													2		0.5	1		0.5													3		1	4
Semiconductor Devices													2																		2			2
Analog Electronics													2	0.5	0.5																2	0.5	0.5	3
Digital Electronics													1	0.5	0.5																1	0.5	0.5	2
Electrical Machines and Equipments													1	0.5	0.5	1															2	0.5	0.5	3
Signals and Systems																2															2			2
Microprocessors																1	0.5	0.5													1	0.5	0.5	2
Feedback Control																1	0.5	0.5													1	0.5	0.5	2
Power Electronics																1	0.5	0.5													1	0.5	0.5	2
Electrical Installation and Safty																2															2			2
Internship at the end of year3																2															2			2
Sensors and Actuators																			1	0.5	0.5										1	0.5	0.5	2
Digital Signal Processing																			1	0.5	0.5										1	0.5	0.5	2
Analog Communications																			1	0.5	0.5										1	0.5	0.5	2
Multivariable Control																			1	0.5	0.5										1	0.5	0.5	2
VHDL and FPGA																			1	1											1		1	2
Random Process																			2												2			2
Numerical Analysis and Optimization																			3												3			3
Information Theory and Coding																						1	0.5	0.5							1	0.5	0.5	2
Robotics																						2									2			2
Transmission and Swiching																						1	0.5	0.5							1	0.5	0.5	2
Microwave																						2									2			2
Propagation of Electromagnetic Waves																						2									2			2
Digital Communications																						1	0.5	0.5							1	0.5	0.5	2
Wireless and Mobile Communication																						1	0.5	0.5							1	0.5	0.5	2
Industrial Informatics																						2									2			2
Internship at the end of year4																						2									2			2
Broadband Technology																									2						2			2
Telecommunication Systems																									2	0.5	0.5				2	0.5	0.5	3
Nanoelectronics																									1	0.5	0.5				1	0.5	0.5	2
Data Communications																									1		1				1		1	2
Optical Communication																									1	0.5	0.5				1	0.5	0.5	2
Project Management for Engineering																									2						2			2
Senior Project																										2					2		2	4
Internship for dissertation																																			
Total for specialities													8	1.5	2	11	1.5	2	10	2	3	14	2	2	9	1.5	4.5	9	0	0	61	8.5	14	83
TOTAL													17			19			17			20			17			9			174			

23-2

Number of Credits of IT Engineer Program

	Year 1						Year 2						Year 3						Year 4						Year 5						Subtotal			Total
	I			II			III			IV			V			VI			VII			VIII			IX			X						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
FOUNDATION YEAR																																		
ENVIRONMENT	2																												2			2
MANAGEMENT AND ACCOUNTING	3																												3			3
GEOMETRY	1	1																											1	1		2
HISTORY	2																												2			2
MECHANICAL	2	0.75	0.25																										2	0.8	0.25	3
PHILOSOPHY	2																												2			2
ANALYSIS I				2	1																								2	1		3
TECHNICAL DRAWING				1	1																								1	1		2
COMPUTER				1		1										1													1	1	1	3
MARKETING				2																									2			2
THERMODYNAMICS				2	0.75	0.25																							2	0.8	0.25	3
LINEAR ALGEBRA							2	1																					2	1		3
ANALYSIS II							2	1																					2	1		3
CHEMISTRY							2	1																					2	1		3
ELECTROKINETIC							2	0.75	0.25																				2	0.8	0.25	3
ELECTROMAGNETIC										2	0.75	0.25																	2	0.8	0.25	3
OPTICS AND WAVES										2	1																		2	1		3
PROBABILITY AND STATISTICS										2	1		1	1															3	2		5
ENGLISH									1			2			1			2			1			1			1				9	9
FRENCH			4			4			3			4			2			1			1			1			1				21	21
SUBTOTAL	12	2	4	8	3	5	8	4	4	6	3	6	1	1	3		1	3			2			2			2		35	13	32	80
TOTAL	18			16			16			15			5			4			2			2			2				80			

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Number of Credits of IT Engineer Program

	Year 1						Year 2						Year 3						Year 4						Year 5						Subtotal			
	I			II			III			IV			V			VI			VII			VIII			IX			X						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	Total
SPECIALITIES	I			II			III			IV			V			VI			VII			VIII			IX			X			Sous total			Total
ANALYSIS AND DESIGN OF INFORMATION													2																		2			2
COMPUTER ARCHITECTURE													1			1	0.5	0.5													2	0.5	0.5	3
ALGORITHMS AND PROGRAMMING													2	0.5	1	1	0.5	1													3	1	2	6
ELECTRONICS													1																		1			1
COMBINATION LOGIC AND SEQUENCING													1		0.5	1		0.5													2		1	3
DISCRETE MATHEMATICS													2																		2			2
INTRODUCTION TO COMPUTER SYSTEMS													2																		2			2
DATABASES																1	0.5	0.5													1	0.5	0.5	2
COMPUTER THOERY																2															2			2
SUMMER INTERNSHIP																2															2			2
AUTOMATION THEORY																2															2			2
ADVANCED ARCHITECTURE																			2												2			2
LOGIEL ENGINEERING																			1	0.5	1.0	2		1							3	0.5	1.5	5
LANGUAGE C / C + +																			1		1										1		1	2
INTERNET PROGRAMMING																			1	0.5	0.5	1	0.5	0.5							2	1	1	4
NETWORKS																			1		0.5	1		0.5							2		1	3
OPERATING SYSTEM																			1	0.5	0.5	1									2	0.5	0.5	3
TELECOMMUNICATION																			1		1.0										1		1	2
NETWORK ADMINISTRATION AND																						1	0.5	0.5							1	0.5	0.5	2
ADVANCED DATABASES AND DBMS																						1	0.5	0.5							1	0.5	0.5	2
COMPILATION																						1	0.5	0.5							1	0.5	0.5	2
INTERFACE OF HUMAN MACHINE																						2									2			2
INTERNSHIP I4																						2									2			2
PARALLEL ARCHITECTURES																									2						2			2
CONFERENCES AND COURSES																										2						2		2
CONDUCT OF IT PROJECTS																									1	1					1	1		2
COMPUTER GRAPHICS																									-	-	-							
ARTIFICIAL INTELLIGENCE																									1		1				1		1	2
MODELING AND SIMULATION																									2						2			2
MULTIMEDIA																									-	-	-							
FUNCTIONAL PROGRAMMING AND																									-	-	-							
NETWORKS: ADMINISTRATION AND																									1		1				1		1	2
DISTRIBUTED SYSTEMS																									1		1				1		1	2
IMAGE PROCESSING																									-	-	-							
VOICE/SPEECH PROCESSING																									-	-	-							
INTERNSHIP AT END OF STUDIES																												9			9			9
SUBTOTAL													11	0.5	1.5	10	1.5	2.5	8	1.5	4.5	12	2	3	8	3	3	9	0	0	58	8.5	14.5	81
TOTAL													13			14			14			17			14			9			81			
GRAND TOTAL													18			18			16			19			16			9			161			

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Number of Credits of IT Techician Program

	Year 1						Year 2						Year 3						Subtotal			Total
	I			II			III			IV			V			VI						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP				
FOUNDATION YEAR																						
FRENCH			1			1			1			1			1						5	5
ENGLISH			2			2			2			2			2						10	10
MATHEMATICS	2		3	3		2													5		5	10
SUBTOTAL	2	0	6	3	0	5	0	0	3	0	0	3	0	0	3	0	0	0	5	0	20	25
TOTAL	8			8			3			3			3						25			

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Number of Credits of IT Techician Program

	Year 1						Year 2						Year 3						Subtotal			Total
	I			II			III			IV			V			VI						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP				
SPECIALITIES	I			II			III			IV			V			VI			Sous total			Total
ALGORITHMS AND PROGRAMMING	2	1	1																2	1	1	4
INTRODUCTION TO COMPUTER	2		1																2		1.0	3
COMPUTER ARCHITECTURE				2		1													2		1	3
USING ALGORITHMS AND DATA				1	1	1													1	1	1	3
ELECTRONICS				2															2			2
ANALYSIS AND DESIGN OF INFORMATION							1	1											1	1		2
DATABASES							1	1	1										1	1	1	3
INTRODUCTION TO NETWORKS							3		1										3		1	4
LANGUAGE C / C + +							1		1										1		1	2
DISCRETE MATHEMATICS							2												2			2
WORKSHOP SOFTWARE ENGINEERING										2									2			2
MANAGEMENT OF IT PROJECTS										1									1			1
OBJECT-ORIENTED PROGRAMMING										3		1							3		1	4
OPERATING SYSTEM										1		1							1		1	2
INTERNSHIP T2																						
METHODS UML DESIGN AND USER										1		1							1		1	2
WEB PAGE DESIGN										2		1							2		1	3
NETWORKING AND SECURITY													1		1				1		1	2
MULTIMEDIA													2		0				2			2
PROGRAMMING ON THE PLATFORM. NET													1		1				1		1	2
INTERNET PROGRAMMING													2		2				2		2	4
NETWORKS													2						2			2
MANAGEMENT SYSTEM DATABASE													2						2			2
INTERNSHIP IN BUSINESS STUDIES																		5			5	5
SUBTOTAL							8	2	3	10	0	4	10	0	4	0	0	5	37	4	20	61
TOTAL							13			14			14			5			61			
GRAND TOTAL	8			8			16			17			17			5			86			

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Curriculum of Department of Food Technology and Chemical Engineering

3rd year, Engineering

1st Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	French		64		64	2
2	English		32		32	1
3	Statistic	16	32		48	2
4	Basis Chemistry	32	16	48	96	4
5	Analytical Chemistry	16	8	24	48	2
6	Physical Chemistry	16	20	12	48	2
7	Fluid Mechanic	32			32	2
8	Unit Operation I	16			16	1
Total Semester 1		**128**	**172**	**84**	**384**	**16**

2nd Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	French		32		32	1
2	English		64		64	2
3	Mathlab	32			32	2
4	Unit operation II	48	20	12	80	4
5	Structural and Metabolism Biochemistry I	48			48	3
6	General Microbiology	48			48	3
7	Food Chemistry I	32			32	2
8	Heat and Mass transfer	48			48	3
9	Final year 3 internship					2
Total Semester 2		**256**	**116**	**12**	**384**	**22**

4th year, Engineering

1st Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	French		32		32	1
2	English		32		32	1
3	Water Chemistry	16	8	24	48	2
4	Food microbiology	32		32	64	3
5	Structural and Metabolism Biochemistry II	16	8	24	48	2
6	Health and Nutrition	32			32	2
7	Food Preservation I	32			32	2
8	Food Chemistry II	16		32	48	2
9	Food risk I	48			48	3
Total Semester 1		**192**	**80**	**112**	**384**	**18**

2nd Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	French		32		32	1
2	English		32		32	1
3	Biotechnology I	32			32	2
4	Technico-economic study	32			32	2
5	Cooling production	16	20	12	48	2
6	Food Preservation II	48			48	3
7	Food processing I	32		32	64	3
8	Food risk II	32			32	2
9	Packaging	32			32	2
10	Genetic	32			32	2
Total Semester 2		**256**	**84**	**44**	**384**	**20**

5th year, Engineering

1st Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	French		32		32	1
2	English		32		32	1
3	Agro-food Industry Menagement	32			32	2
4	Sensorial analysis	32			32	2
5	Project management	32			32	2
6	Food processing II	80			80	5
7	Hygien and Security	32			32	2
8	Quality assurance in agro-food industry	32			32	2
9	Automatisation and regulation	32			32	2
10	Biotechnology II	16		32	48	2
Total Semester 1		**288**	**64**	**32**	**384**	**21**

2nd Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	Final 5th year internship (3 months)					9
Total Semester 2		**0**	**0**	**0**	**0**	**9**

2nd year High Technician

1st Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	French		32		32	1
2	English		32		32	1
3	General Chemistry	16	8	24	48	2
4	Organic Chemistry	32	8	24	64	3
5	Analytical Chemistry	16	8	24	48	2
6	Physical Chemistry	16	20	12	48	2
7	Fluid mechanic	16			16	1
8	Unit operation I	16			16	1
9	Heat and Mass transfer	32			32	2
10	General Microbiology	48			48	3
Total Semester 1		**192**	**108**	**84**	**384**	**18**

2nd Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	French		32		32	1
2	English		32		32	1
3	Unit operation II	32	20	12	64	3
4	Structural and Metabolism Biochemistry	32	8	24	64	3
5	Water Chemistry	16	8	24	48	2
6	Food Chemistry	48		32	80	4
7	Food Microbiology	32		32	64	3
8	Final year 2 internship					2
Total Semester 2		**160**	**100**	**124**	**384**	**19**

3rd year High Technician

1st Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	French		48		48	1.5
2	English		32		32	1
3	Sensorial analysis	16			16	1
4	Food risk	32			32	2
5	Technico-economic study	16			16	1
6	Packaging	32			32	2
7	Automatisation and regulation	16			16	1
8	Quality assurance in agro-food industry	32			32	2
9	Food processing I	64		32	96	5
10	Food Preservation I	64			64	4
Total Semester 1		**272**	**80**	**32**	**400**	**21.5**

2nd Semester

No	Subjet	Course	Exercise	LW	Total Hours	Crédit
1	French		16		16	0.5
2	Accounting	32			32	2
3	Food Preservation II	16			16	1
4	Food processing II	32			32	2
5	Biotechnology	32			32	2
6	Health and Nutrition	32			32	2
7	Automatisation and regulation	16			16	1
8	Hygien and Security	16			16	1
9	Final year 3 internship					5
Total Semester 2		**176**	**16**	**0**	**192**	**15.5**

Number of Credits of Civil Engineer Program

	Year 1						Year 2						Year 3						Year 4						Year 5						Subtotal			Total
	I			II			III			IV			V			VI			VII			VIII			IX			X						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
FOUNDATION YEAR																																		
ENVIRONMENT	2																												2			2		
MANAGEMENT AND ACCOUNTING	3																												3			3		
GEOMETRY	1	1											1	1															2	2		4		
HISTORY	2																												2			2		
MECHANICAL	2	1																											2	1		3		
PHILOSOPHY	2																												2			2		
ANALYSIS I				2	1																								2	1		3		
TECHNICAL DRAWING				1	1																								1	1		2		
COMPUTER				1		1										1	0.5												2	0.5	1	3.5		
MARKETING				2																									2			2		
THERMODYNAMICS				2	1																								2	1		3		
LINEAR ALGEBRA							2	1																					2	1		3		
ANALYSIS II							2	1																					2	1		3		
CHEMISTRY							2	1																					2	1		3		
ELECTROKINETIC							2	1																					2	1		3		
ELECTROMAGNETIC										2	1																		2	1		3		
OPTICS AND WAVES										2	1																		2	1		3		
PROBABILITY AND STATISTICS										2	1																		2	1		3		
ENGLISH									1			2			1			1			1			1			1					8	8	
FRENCH			4			4			3			4			1			1			1			1			1					20	20	
SUBTOTAL	12	2	4	8	3	5	8	4	4	6	3	6	1	1	2	1	1	2	0	0	2	0	0	2	0	0	2				36	14	29	78.5
TOTAL	18			16			16			15			4			4			2			2			2						79			

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Number of Credits of Civil Engineer Program

	Year 1						Year 2						Year 3						Year 4						Year 5						Subtotal			Total
	I			II			III			IV			V			VI			VII			VIII			IX			X						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
SPECIALITES	I			II			III			IV			V			VI			VII			VIII			IX			X			Sous total			Total
NOTION OF DAO AND COMPUTER DESIGN															1																		1	1
GEOLOGY AND HYDROLOGY													3																		3			3
CONTINUUM MECHANICS AND FLUID													3	1																	3	1		4
STRENGTH OF MATERIALS													1	1		2	0.5	0.5													3	1.5	0.5	5
TOPOGRAPHY													2		1																2		1	3
ARCHITECTURE																1	1														1	1		2
ELECTRICITY OF BUILDING AND																2															2			2
I CONSTRUTION MATERIALS (CONCRETE)																2		1													2		1	3
END OF I3 INTERNSHIP																															2			2
THERMAL BUILDING AND THERMAL																2															2			2
BUILDING TECHNOLOGY																1	1														1	1		2
ANALYSIS OF STRUCTURES																			2			1	1								3	1		4
REINFORCED CONCRETE																			1	1		1	1								2	2		4
METAL CONSTRUCTION																			2			1	1								3	1		4
CONSTRUCTION EQUIPMENT AND																			2												2			2
SANITATION INSTALLATION, ROADS AND																			3												3			3
SOIL MECHANICS AND FOUNDATIONS																			2	0.5	0.5	2	1								4	1.5	0.5	6
ROAD																			3				0.5	1							3	0.5	0.5	4
SECURITY AND LAW																			1						2						3			3
PRESTRESSED CONCRETE																						2			1	1					3	1		4
WOOD CONSTRUCTION																						1	1								1	1		2
SPECIAL TECHNOLOGY OF																									2						2			2
NOTION OF DAO AND COMPUTER DESIGN																									1	1					1	1		2
MARKETS																									1						1			1
PLANNING AND METRES																									2	1					2	1		3
BRIDGES																									3	1					3	1		4
INTERNSHIP AT END OF STUDIES																												9			9			9
SUBTOTAL													9	2	2	10	2.5	1.5	16	1.5	0.5	8	5.5	1	12	4	0	9	0	0	66	16	4.5	86
TOTAL													13			14			18			14			16			9			86			
GRAND TOTAL													17			18			20			16			18			9			165			

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Number of Credits of Architecture Engineer Program

	Year 1						Year 2						Year 3						Year 4						Year 5						Subtotal			Total
	I			II			III			IV			V			VI			VII			VIII			IX			X						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
FOUNDATION YEAR																																		
ENVIRONMENT	2																												2			2
MANAGEMENT AND ACCOUNTING	3																												3			3
GEOMETRY	1	1																											1	1		2
HISTORY	2																												2			2
MECHANICAL	2	0.75	0.25																										2	0.8	0.25	3
PHILOSOPHY	2																												2			2
ANALYSIS I				2	1																								2	1		3
TECHNICAL DRAWING				1	1																								1	1		2
COMPUTER				1		1											1												1	1	1	3
MARKETING				2																									2			2
THERMODYNAMICS				2	0.75	0.25																							2	0.8	0.25	3
LINEAR ALGEBRA							2	1																					2	1		3
ANALYSIS II							2	1																					2	1		3
CHEMISTRY							2	1																					2	1		3
ELECTROKINETIC							2	0.75	0.25																				2	0.8	0.25	3
ELECTROMAGNETIC										2	0.75	0.25																	2	0.8	0.25	3
OPTICS AND WAVES										2	1		1	1															3	2		5
PROBABILITY AND STATISTICS										2	1																		2	1		3
ENGLISH									1			2			1			1			1			1			1					8	8
FRENCH			4			4			3			4			1			1			1			1			1					20	20
SUBTOTAL	12	2	4	8	3	5	8	4	4	6	3	6	1	1	2	0	1	2	0	0	2	0	0	2	0	0	2				35	13	30	78
TOTAL	18			16			16			15			4			3			2			2			2						78			

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Number of Credits of Architecture Engineer Program

	Year 1						Year 2						Year 3						Year 4						Year 5						Subtotal			Total
	I			II			III			IV			V			VI			VII			VIII			IX			X						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
SPECIALITIES	I			II			III			IV			V			VI			VII			VIII			IX			X			subtotal			Total
DESCRIPTIVE GEOMETRY I													1	1																	1	1		2
ART HISTORY AND KHMER													2																		2			2
ORNAMENTS AND ELEMENTS OF KHMER													2	1																	2	1		3
SKETCH AND COLOR I													2	1																	2	1		3
BUILDING MATERIALS													1	1																	1	1		2
BUILDING THERMAL													1																		1			1
STRENGTH OF MATERIALS																2	0.5	0.5													2	0.5	0.5	3
TOPOGRAPHY																1		1													1		1	2
DESCRIPTIVE GEOMETRY II																1	1														1	1		2
CONCEPT DAO (2D)																1		1													1		1	2
HISTORY OF ARCHITECTURE																1															1			1
ARCHITECTURAL CONSERVATION AND																1															1			1
URBAN PLANNING I																1															1			1
GENERAL CONCEPT OF THE																2															2			2
END OF IA3 INTERNSHIP																																		
ÉCOLOGIGUE ARCHITECTURE ADAPTED																			1												1			1
CONCEPT CAD (3D)																			1		1										1		1	2
ANALYSIS OF STRUCTURES																			1	1											1	1		2
CIVIL ENGINEERING AND URBAN																			2												2			2
GEOGRAPHIC INFORMATION SYSTEM																			1												1			1
SKETCH AND COLOR II																			1		1										1		1	2
SANITATION INSTALLATION																			1												1			1
ELECTRICITY BUILDING																			1												1			1
REINFORCED CONCRETE																			1	1											1	1		2
BUILDING TECHNOLOGY																			2												2			2
ROADS AND UTILITIES (VRD)																						1									1			1
ARCHITECTURE DESIGN																						2									2			2
INTERIOR DECORATION																						2									2			2
URBAN PLANNING II																						2									2			2
LANDSCAPE ARCHITECTURE																						2									2			2
MODEL																							1										1	1
URBAN ECONOMICS AND REGULATION																						2									2			2
METAL CONSTRUCTION																						2									2			2
SOIL MECHANICS																						2									2			2
WORKSHOP I																						1		1							1		1	2
WOOD CONSTRUCTION																							2								2			2
REAL ESTATE DEVELOPMENT FOR																							1								1			1
WORKSHOP II																							1			1					1		1	2
PROFESSIONAL PRACTICE																							1								1			1
ARCHITECTURAL DESIGN: SPACE AND																							2								2			2
PLANNING																										1						1	1	1

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Number of Credits of Architecture Engineer Program

	Year 1						Year 2						Year 3						Year 4						Year 5						Subtotal			Total
	I			II			III			IV			V			VI			VII			VIII			IX			X						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
METRES																									1						1			1
STABILITY CONCEPT OF GRAND TOWERS																									2						2			2
WORKSHOP III																									1		1				1		1	2
COMPUTER DESIGN																											1						1	1
PRESTRESSED CONCRETE																									1						1			1
INTERNSHIP AT END OF STUDIES																												9			9			9
SUBTOTAL													9	4	0	10	1.5	2.5	12	2	2	16	0	2	12	0	4	9	0	0	59	7.5	10.5	77
TOTAL													13			14			16			18			16			9			77			
GRAND TOTAL													17			17			18			20			18			9			155			

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Number of Credits of Civil Techician Program

	Year 1						Year 2						Year 3						Subtotal			Total
	I			II			III			IV			V			VI						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	
FOUNDATION YEAR																						
IINÉAIRE ALGEBRA AND GEOMETRY	3	1																	10	2		12
ANALYSIS	2	1		2	1														14	4		18
TECHNICAL DRAWING	1	1																	4	2		6
MECHANICAL	2	1.75	0.25				1	1											12	5.5	0.5	18
CHEMISTRY				1	1														4	2		6
ELECTRICITY				2	1														7	2		9
COMPUTER				1		1										2			10		2	12
PROBABILITY				1	1														4	2		6
THERMODYNAMICS				1	0.75	0.25													4	1.5	0.5	6
ENGLISH									1			1			1						3	3
FRENCH			3			2			1			1			1			1	9		18	27
SUBTOTAL	8	5	3	8	5	3	1	1	2	0	0	2	0	0	2	2	0	1	78	21	24	123
TOTAL	16			16			4			2			2			3			83			83

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

Number of Credits of Civil Techician Program

	Year 1						Year 2						Year 3						Subtotal			
	I			II			III			IV			V			VI						
	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	C	TD	TP	Total
SPECIALITIES	I			II			III			IV			V			VI						
CONSTRUCTION EQUIPMENT AND							2												6			6
GEOLOGY AND HYDROLOGY							2												6			6
STRENGTH OF MATERIALS							2			2	1								13	2		15
ELECTRICITY OF BUILDING AND							2												6			6
ELECTRICAL							2												6			6
TOPOGRAPHY							3		1										10		2	12
DESIGN OF CONSTRUCTION										1		1							4		2	6
SANITATION INSTALLATION, ROADS AND										2	1								7	2		9
MARKETS										1									3			3
BUILDING MATERIALS										1	0.5	0.5							4	1	1	6
FLUID MECHANICS							2												6			6
SECURITY										1									3			3
END OF T2 INTERNSHIP																						
BUILDING TECHNOLOGY										2	1								7	2		9
ANALYSIS OF STRUCTURES													2									
REINFORCED CONCRETE													2	1					7	2		9
WOOD CONSTRUCTION													2						6			6
METAL CONSTRUCTION													1	1					4	2		6
AUTOCAD													1	1					4	2		6
SOIL MECHANICS													1	1					4	2		6
ROADS													1	1					4	2		6
PRESTRESSED CONCRETE																1	1		4	2		6
METRES																1	0.5		3.5	1		4.5
PLANNING																1			3			3
BRIDGES																1	1		4	2		6
END OF STUDIES INTERNSHIP																						
SUBTOTAL							15	0	1	10	3.5	1.5	10	5	0	4	2.5	0	131	22	5	157.5
TOTAL								16			15			15			6.5		105			105
GRAND TOTAL		16			16			20			17			17			10		188			188

C: Class Lecture
TD: Classroom Exercise
TP: Laboratory Exercise

One credit subject requries 32 hours

機械. カリキュラム（学士）

CURRICULUM 2010-2011

ENGINEERS Industrial & Mechanical Engineering Department

COMMON STUDIES	Number of hours (lectures, Exercises, Practices)											Number o[illegible] credits			
	1A		2A		3A		4A		5A		TOTAL	Lecture	Exercise	[illegible]ractice	T
	I	II	III	IV	V	VI	VII	VIII	IX	X					
French					64	32	32	32	32		192		6		
English					32	64	32	32	32		192		6		
Mathematics					48						48	1	1		
Physics/Chemistry											0				
Technical drawing											0				
Computer programming (Matlab)						32					32		1		
Philosophy											0				
History											0				
Environnement											0				
Marketing											0				
Management and finance											0				
TOTAL common studies	**0**	**0**	**0**	**0**	144	128	64	64	64		**464**				
SPECIALTIES															
Mechanics					32	32					64	2	1		
Strength of materials					32	32					64	2	1		
Materials Sciences					32	48					80	3		1	
Thermics						48					48	1	1		
Fluids mechanics					48						48	1	1		
Industrial Hydraulics						32					32	2			
Mechanical design, AutoCAD					48	32					80	1	1	[illegible]	
Mechanical production, Metrology					48	32					80	1		2	
Training after year three															
Hyperstatics, Finite elements							48				48	1	1		
Electrotechnics							32				32	2			
Electronics								32			32	2			
Power' electronics								32			32	2			
Thermodynamics							48				48	1	1		
Organs of machines							48				48	1	1		
Mechanical constructions I								48			48	1	1		
Automatism							48				48	1		[illegible]	
Servo-control systems								48			48	1	1		
Computer Aids Manufacturing (CAM)							48				48	1		[illegible]	
Welding technology							48				48	1		[illegible]	
Welding constructions								32			32	2			
Foundry								32			32	2			
Internal combustion engine I								48			48	1		[illegible]	
Refrigeration and air conditioning I								48			48	1		[illegible]	
Regulation									32		32	2			
Mechanical constructions II									32		32			1	
Forming operations									32		32	2			
Plastic materials operations									32		32	2			
Internal combustion engine II									48		48	1		1	
Refrigeration and air conditioning II									48		48	1		1	
Thermics of locales									32		32	2			
Refrigeration and air conditioning Project									32		32			1	
Enterprises organization and management									32		32	2			
Final year training										432	432				
Total for department					240	256	320	320	320						
TOTAL GENERAL	**0**	**0**	**0**	**0**	**384**	**384**	**384**	**384**	**384**		**1920**				

機械 カリキュラム Diploma (29)-2 機

CURRICULUM 2010-2011 DUT Industrial & Mechanical Engineering Department											
COMMON STUDIES	**Number of bours (Lectures, Exercises, Practises)**							**Number of credits**			
	1A		**2A**		**3A**		**TOTAL**	**Lecture**	**Exercise**	**Practise**	**TOTAL**
	I	**II**	**III**	**IV**	**V**	**VI**					
French			32	32	32	32	128		4		4
English			32	32	32		96		3		3
Mathematics							0				0
Physics							0				0
Chemistry							0				0
Informatique							0				0
Technical drawing							0				0
Management and accounting						32	32	2			2
TOTAL common studies	**0**	**0**	64	64	64	64	**256**				**9**
SPECIALTIES											
Electrotechnics				32			32	2			2
Mechanics			48	32			80	3	1		4
Strength of materials			16	48			64	2	1		3
Material Sciences			48	32			80	3		1	4
Thermics, Thermodynamics			32	48			80	3	1		4
Hydraulics			16	32			48	1	1		2
Mechanical design I			48	48			96	2	1	1	4
AutoCAD			32				32			1	1
Mechanical production I			48	48			96	2		2	4
Metrology and Control			32				32			1	1
Training after year two											2
Electronics					32		32	2			2
Power' electronics					32		32	2			2
Mechanical design II					48		48	1	1		2
Mechanical production II					48		48	1		1	2
Machine tools numerical control						32	32			1	1
Maintenance of engine					48	32	80	3		1	4
Systems of mechanical welding					64		64	2		1	3
Refrigeration and conditioning					48	32	80	3		1	4
Industrial maintenance						16	16	1			1
Enterprises organization and management						16	16	1			1
Final year training						192	192				5
Total for department			320	320	320	320					**67**
TOTAL GENERAL	**0**	**0**	**384**	**384**	**384**	**384**	**1536**				

Remarks: **1 course credit = 16hr**
1 exercise or practise credit = 32hr

Name of department : Industrial & Mechanical Engineering (GIM)
Program : High Level Technician (DUT)
Year : 2nd

1st semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
French	French lecturers		32		32	1
English	English lecturers		32		32	1
Mechanics	Ngor Bunroth	16	32		48	2
Strength of materials	Chhith Sao Someth	16			16	1
Materials Sciences	Ngor Bunroth	32	16		48	2.5
Thermics, Thermodynamics	Khoun Rithymean	32			32	2
Hydraulics	Khoun Rithymean	16			16	1
Mechanical design I	Srang Sarot	16	32		48	2
AutoCAD	Chhith Sao Someth			32	32	1
Mechanical production I	Kruy Sothea	16		32	48	2
Metrology and control	Kruy Sothea			32	32	1
Total for semester 1		144	144	96	384	16.5

2nd semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
French	French lecturers		32		32	1
English	English lecturers		32		32	1
Electrotechnics	Chhith Chhunny	32			32	2
Mechanics	Ngor Bunroth	32			32	2
Strength of materials	Chhith Sao Someth	16	32		48	2
Materials Sciences	Ngor Bunroth	16		16	32	1.5
Thermics, Thermodynamics	Khoun Rithymean	16	32		48	2
Hydraulics	Khoun Rithymean		32		32	1
Mechanical design II	Srang Sarot	16	16	16	48	2
Mechanical production II	Kruy Sothea	16		32	48	2
Total for semester 2		144	176	64	384	16.5

Total per year	288	320	160	768	33

Name of department : Industrial & Mechanical Engineering (GIM)
Program : High Level Technician (DUT)
Year : 3rd

1st semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
French	French lecturers		32		32	1
English	English lecturers		32		32	1
Electronics	Chhith Chhunny	32			32	2
Power' electronics	Seng Silong	32			32	2
Mechanical design II	Srang Sarot	16	32		48	2
Mechanical production II	Kruy Sothea	16		32	48	2
Maintenance of engines	Rey Sopheak	16	16	16	48	2
tems of mechanical welding	Kong Sangva	32		32	64	3
Refrigeration and air conditioning	Meng Chamnan	16	16	16	48	2
Training after year two	Lecturers of GIM					2
Total for semester 1:		160	128	96	384	19

2nd semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
French	French lecturers		32		32	1
Management and Accounting	Hang Vinchothy	32			32	2
Machine tools numerical control	Kruy Sothea			32	32	1
Maintenance of engines	Rey Sopheak	32			32	2
Refrigeration and air conditioning	Meng Chamnan	32			32	2
Industrial maintenance	Phat Boné	16			16	1
Enterprises organization and management	Phat Boné	16			16	1
al year training	Profs de GIM				192	5
Total for semester 2:		128	32	32	384	15

Total per year	288	160	128	768	34

Name of department : Industrial & Mechanical Engineering (GIM)
Program : Engineer
Year : 3rd

1st semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
French	French lecturers		64		64	2
English	English lecturers		32		32	1
Mathematics (Statistics)	Lecturers of TC	16	32		48	2
Mechanics	Ngor Bunroth	16	16		32	1.5
Strength of materials	Chhith Sao Someth	16	16		32	1.5
Materials Sciences	Ngor Bunroth	32			32	2
Fluids mechanics	Khoun Rithymean	16	32		48	2
Mechanical design, AutoCAD	Srang Sarot	16	16	16	48	2
Mechanical production, Metrology	Kim Vireak	16		32	48	2
Total for semester 1		128	208	48	384	16

2nd semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
French	French lecturers			32	32	1
English	English lecturers			64	64	2
Informatique (MatLAB)	Khoun Rithymean		32		32	1
Mechanics	Ngor Bunroth	16	16		32	1.5
Strength of materials	Chhith Sao Someth	16		16	32	1.5
Materials Sciences	Ngor Bunroth	16	16	16	48	2
Thermics	Khoun Rithymean	16	32		48	2
Industrial Hydraulics	Khoun Rithymean	32			32	2
Mechanical design, AutoCAD	Srang Sarot		16	16	32	1
Mechanical production, Metrology	Kim Vireak			32	32	1
Total for semester 2		96	112	176	384	15

Total per year		224	320	224	768	31

Name of department : Industrial & Mechanical Engineering (GIM)
Program : Engineer
Year : 4th

1st semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
French	French lecturers		32		32	1
English	English lecturers		32		32	1
Hyperstatics, Finite elements	Chhith Sao Someth	16	32		48	2
Electrotechnics	Bun Seang	32			32	2
Thermodynamics	Khoun Rithymean	16	32		48	2
Organs of machines	Chan Sarin	16	32		48	2
Automatism	Ping Sethikar	16	16	16	48	2
Computer Aids Manufacturing (CAM)	Kim Vireak	16		32	48	2
Welding technology	Kong Sangva	16		32	48	2
Training after year 3	Lecturers of GIM					2
Total for semester 1		128	176	80	384	18

2nd semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
French	French lecturers		32		32	1
English	English lecturers		32		32	1
Electronics	Eng Vouch Chhay	32			32	2
Power' electronics	Chrin Phok	32			32	2
Mechanical constructions I	Srang Sarot	16	32		48	2
Servo-control systems	Chrin Phok	16	32		48	2
Welding constructions	Kim Vireak	32			32	2
Foundry	Kim Vireak	32			32	2
Internal combustion engine I	Pan Sovanna	16		32	48	2
Refrigeration and air conditioning I	Un Amata	16		32	48	2
Total per year		192	128	64	384	18

Total per year		320	304	144	768	36

Name of department : Industrial & Mechanical Engineering (GIM)
Program : Engineer
Year : 5th

1st semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
French	French lecturers		32		32	1
English	English lecturers		32		32	1
Regulation	Chrin Phork	32			32	2
Mechanical constructions II	Srang Sarot		16	16	32	1
Forming operations	Kim Vireak	32			32	2
Plastics materials operations	Kruy Sothea	32			32	2
Internal combustion engine II	Pan Sovanna, Rey Sopheak	16	16	16	48	2
Refrigeration and air conditioning II	Un Amata	16	16	16	48	2
Thermics of locales	Chan Sarin	32			32	2
Refrigeration and air conditioning project	Chan Sarin		16	16	32	1
Enterprises organization and management	Phat Boné	32			32	2
Total for semester 1		**192**	**128**	**64**	**384**	**18**

2nd semester

Subject	Lecturers	Lecture	Exercise	Practice	Total hour	Credit
Final year training	Lecturers of GIM				432	9
Total for semester 2		**0**	**0**	**0**	**432**	**9**

Total per year	**192**	**128**	**64**	**816**	**27**

建物　カリキュラム（学士）

CURRICULUM 2010-2011

ENGINEERS -Department of Rural Engineering, Geotechnical Engineering Division

COMMON STUDIES	Number of hours (lectures, Exercises, Practices)											Number of credits			
	1A		2A		3A		4A		5A		TOTAL	Lecture	Exercise	Practice	TOT
	I	II	III	IV	V	VI	VII	VIII	IX	X					
French					64	32	32	32	32		192		6		6
English					32	64	32	32	32		192		6		6
Mathematics					48						48	1	1		2
Physics/Chemistry											0				0
Technical drawing											0				0
Computer programming (Matlab)						32					32		1		1
Philosophy											0				0
History											0				0
Environnement											0				0
Marketing											0				0
Management and finance											0				0
TOTAL common studies	**0**	**0**	**0**	**0**	144	128	64	64	64		**464**				**15**
SPECIALTIES															
Structure Analysis							64				64	2	1		3
Construction of Rural Road							48				48	2	1		3
Structural Geology							32				32	1	1		2
Soil Mechanics							32				32	1		[redacted]	2
Mineral Exploration and Prospecting							32				32	2			2
Petrology and Mineralogy							32				32	1		[redacted]	2
GIS							64				64	1	1	[redacted]	3
Construction by Concrete								48			48	2	1		3
Bridge Construction								48			48	2	1		3
Groundwater Exploitation								32			32	1	1		2
Hydrogeology II								32			32	1	1		2
Rock Mechanics								32			32	1	1		2
Slope Stability								32			32	1	1		2
Technique of Geotechnical Prospecting								32			32	1	1		2
Drilling Techniques							16	16			32	1		[redacted]	2
Field Visit															
Rock Excavation Techniques by Blasting								48	16		64	1		[redacted]	2
Mining Project									16		16	1			1
Waste Disposal Management									16		16	1			1
Cement Exploitation/Production									64		64	2	1	1	4
Petroleum/gas Exploitation/Production									64		64	1			1
Exploitation of Rock Design									16		16	1			1
Ore Mineral diposit									16		16	1			1
Petroleum geology									32		32	2			2
Mineral Processing									64		64	2	1		3
Work Security									16		16	1			1
Final Academic Project										384					9
Total for Division							320	320	320						**76**
TOTAL GENERAL	**0**	**0**	**0**	**0**	**0**	**0**	**384**	**384**	**384**		**1152**				

2010/12/24 (17)
ITC 片長からメールで受領 -2

Course Planning (revised) for Engineering Program -Curriculum of Geo-Resources and Geotechnical Engineering Department

Third Year, Semester 1

Course	Lecturer	Code	Credits	Hours
E3S1				
Statistics		GRG E3S1 01	2 (1-1)	48
French		GRG E3S1 02	2 (0-2)	64
English		GRG E3S1 03	1 (0-1)	32
Geodesy and Topography	NEAR Mouy Leng	GRG E3S1 04	2 (1-1)	48
Engineering Mechanics	HORNG Vuthy	GRG E3S1 05	2 (1-1)	32
General Geology and Hydrogeology	KIM Vannada	GRG E3S1 06	3 (3-0)	48
Petrology and Mineralogy (Microscopic Analysis)	KONG Sangva / Prof. Shinji Tsukawaki/ KIM Vannada	GRG E3S1 07	3 (1-2)	48
Strength of Materials	HORNG Vuthy	GRG E3S1 08	2(1-1)	32
Drawing Auto CAD	THAI Soksan	GRG E3S1 09	2 (0-2)	32
		Total	**19**	**384**

Third Year, Semester 2

Course	Lecturer	Code	Credits	Hours
E3S2				
French		GRG E3S2 01	1 (0-1)	32
English		GRE E3S2 02	2 (0-2)	64
Geo-Environment	PEN Chhorda	GRG E3S2 03	2 (1-1)	32
Structural geology	PEN Chhorda	GRG E3S2 04	2 (1-1)	32
Mineral Deposit	KONG Bo / KONG Sitha	GRG E3S2 05	2 (2-0)	32
GIS and Mapping Mining Geology	VAMOEURN Nimol	GRG E3S2 06	3 (1-2)	48
Geostatistics	VAMOEURN Nimol	GRG E3S2 07	2 (1-1)	32
Structure Analysis	HORNG Vuthy	GRG E3S2 08	2 (1-1)	32
Soil Mechanics / Lab Test	SIENG Peou	GRG E3S2 09	3 (2-1)	64
General Electro-technique	SEAN Piseth	GRG E3S2	1(1-0)	16

		10		
		Total	**20**	**384**

Fourth Year, Semester 1

Course	Lecturer	Code	Credits	Hours
E4S1				
French		GRG E4S1 01	1 (0-1)	32
English		GRG E4S1 02	1 (0-1)	32
Remote sensing, Satellite Image Interpretation	No Lecturer	GRG E4S1 03	2 (1-1)	32
Mineral Exploration Technique and Prospecting	No Lecturer	GRG E4S1 04	2 (1-1)	48
Geophysics	PICH Bun Choeun/ BUN Kim Nguon ?	GRG E4S1 05	3 (1-2)	64
Geochemistry	KONG Sitha / PICH Bun Choeurn ?	GRG E4S1 06	2 (1-1)	48
Rock Mechanics	SIENG Peou/ DOK Atikagna	GRG E4S1 07	2 (1-1)	32
Earth Structures	HORNG Vuthy / DOK Atikagna	GRG E4S1 08	2 (1-1)	48
Integrated Water Resources Management	PEN Chhorda/ KIM Vannada	GRG E4S1 09	3 (2-1)	48
		Total	**18**	**384**

Fourth Year, Semester 2

Course	Lecturer	Code	Credits	Hours
E4S2				
French		GRG E4S2 01	1 (0-1)	32
English		GRG E4S2 02	1 (0-1)	32
Sedimentology	Prof. Shinji Stukawaki / KIM Vannada	GRG E4S2 03	2 (2-0)	32
Ore Geometry and Reservoir Evaluation	No Lecturer	GRG E4S2 04	2 (1-1)	48
Surface Mining and Underground Mining	No Lecturer	GRG E4S2 05	3 (2-1)	64
Drilling Techniques	PHAT Bone	GRG E4S2 06	2 (1-1)	48
Rock Excavation Techniques by Blasting (Explosive)	KIM Vannada	GRG E4S2 07	2 (1-1)	48
Foundation Engineering I	SIENG Peou/ THAI Soksan	GRG E4S2 08	2 (1-1)	32
Mineral Processing	PHAT Bone	GRG E4S2 09	2 (2-0)	32

Ore Microscopy	No Lecturer	GRG E4S2 10	1 (0-1)	16
Field Study - E4S2			**2**	
		Total	**19**	**384**

Fifth Year, Semester 1

Course	Lecturer	Code	Credits	Hours
E5S1				
French		GRG E5S1 01	1 (0-1)	32
English		GRG E5S1 02	1 (0-1)	32
Foundation Engineering II	SIENG Peou / THAI Soksan	GRG E5S1 03	2(1-1)	32
Petroleum Geology	PHAT Bone	GRG E5S1 04	1 (1-0)	16
Introduction and Fundamental of Petroleum/Gas Engineering	CHEA Samneang / ?	GRG E5S1 05	3 (3-0)	48
Petroleum Chemistry	CHEA Samneang / ?	GRG E5S1 06	2 (2-0)	32
Petroleum/Gas Resources Development	CHEA Samneang / ?	GRG E5S1 07	3 (2-1)	48
Well Logging	CHEA Samneang / ?	GRG E5S1 08	1 (1-0)	16
Mining Planning/Project	KONG Bo / KRI Nalis	GRG E5S1 09	2 (2-0)	32
Mineral Resources Economics and Management	VAMOEURN Nimol	GRG E5S1 10	3 (3-0)	48
Mining Law and Lease	KONG Bo	GRG E5S1 11	1 (1-0)	16
Mining Environment and Pollution Control	CHEA Chandara/ ?	GRG E5S1 12	1 (1-0)	16
Mining work Security	BUN Kim Nguon	GRG E5S1 13	1 (1-0)	16
		Total	**20**	**384**

Fifth Year, Semester 2

E5S2	Credits	Hours
Final Academic Project (Research Activity and Thesis)	9	
Total	**9**	**384**

添付資料 2　カンボジア工科大学（ITC）既存機材リスト

List of Existing Equipment in ITC

No	Name of Equipment	Quantity	Condition		Provided by	Provided in the year of	Purpose of Usage	Location of equipment
			Usable	Not usable				
I. DEPARTMENT OF FOOD TECHNOLOGY AND CHEMICAL ENGINEERING								
1	Autoclave Ascon	1	1	0	AUF	1997	Microorganism	A
2	Autoclave Tuttnaner	1	1	0	CUD	2010	Food technology	F
3	AAs AA 7000-Shimadzu	2	2	0	1CUD+ 1Japon	N/A	Analysis of heavy metal	B
4	Agitateur magnétique TACUSSEL AGIMAX	3	0	3	AUF	1995	All laboratory	C
5	Bain Marie Mermert	1	1	0	AUF	1995	Food Chemistry	D
6	Bain Marie Grant	1	1	0	AUF	1997	Microorganism	A
7	Balance OHAUS EP 413 D	1	0	1	PB	2002	Food Chemistry	D
8	Balance METTLER PM 480	3	0	3	AUF	1995	Food Chemistry, Microorganism, General Chemistry	C
9	Balance Mether PM 480	1	1	0	AUF	1995	Water treament and water quality control	B
10	Balance Sartorius	1	1	0	CUD	2009	Microorganism	A
11	Balance Parcisa	1	1	0	PB	2000	General Chemistry	E
12	Centrifugeuse Jouan	1	1	0	AUF	2000	Food Chemistry	E
13	Colorimettre JENWAY 6061	1	0	1	AUF	1997	General Chemistry	E
14	Conductimettre Model #85/10 FT, SN 99C 1017 AA	1		1	PB	1999	Water treament and water quality control	B
15	HPLC Shimadzu with detecter UV	1	1	0	CUD	2009	Food Chemistry and Organic compon analysis	E
16	Incubater Memmert	2	2	0	AUF	1997	Microorganism	A
17	Kjehldal Buchi	1	1	0	CUD	2010	Food Chemistry	D
18	Kjehldal ?	1	0	1	AUF	1997	Food Chemistry	D
19	Oven high temperature Nabertherm	1	1	0	CUD	2011	Food Chemistry	D
20	Oven Memmert	1	1	0	AUF	1997	Food Chemistry and General Chemistry	E
21	Spectrophotomettre Genesys 10 UV	1	1	0	AUF	1997	Water treament and water quality controlFood Chemistry and General Chemistry	E
22	Spectrophotomettre JENWAY 6105 UV/VIS	1	0	1	AUF	1997	Food Chemistry and General Chemistry	F
II. DEPARTMENT OF COMPUTER SCIENCE								
1	Branch Dell Optiplex 380 (CPU Core 2 Duo 2.93GHz, RAM 2GB, Hard Disk 250GB	26	26	0	CUD	2009	Free Service Lab	A
2	Branch Dell Optiplex 780 (CPU Core 2 Duo 2.93GHz, RAM 2GB, Hard Disk 250GB	28	28	0	CUD	2011	Lab-Multi-Purposes	C
3	Branch Dell Optiplex 360 (CPU Core 2 Duo 2.93GHz, RAM 2GB, Hard Disk 250GB	24	24	0	CUD	2009	Network Lab	B
4	Branch Dell Optiplex 360 (CPU Core 2 Duo 2.93GHz, RAM 2GB, Hard Disk 250GB	28	28	0	CEE	2009	Lab-Multi-Purposes	C
5	Clone Desktop CPU Dual Core 2.0Ghz, RAM 1 GB, Hard Disk 160, Monitor Dell 17"	83	83	0	CUD	2007	Lab-Multi-Purposes	C
6	Printer Canon Laser SHOT LBP 1210	1	1	0	CUD	2008	Office	D
7	Printer Multi-Function Canon MF 8100 Series	1	1	0	CUD	N/A	Can use only copy function	D
III. DEPARTMENT OF FOUNDATION YEAR & GENERAL STUDY								
1	Resistor variables (rheostat), made in RUSS	4	2	2	Soviet (RUSS)	1980	As a component in electrical circuit experiment	
2	Resistor variables (rheostat), Pierron	1	1	0	France	1997	As a component in electrical circuit experiment	
3	Oscilloscope, Pierron	2	2	0	France	2010	As a component in electrical circuit experiment	
4	Oscilloscope, Chauvin Arnoux(A&C)	3	2	1	France	1997	As a component in electrical circuit experiment	
5	GBF, Pierron	4	3	1	France	1997	As a component in electrical circuit experiment	
6	Board of resistors, Pierron	4	4	0	France	1997	As a component in electrical circuit experiment	
7	Board of capacitors, Pierron	2	2	0	France	1997	As a component in electrical circuit experiment	
8	Capacitors 1mF, made in RUSS	20	20	0	Soviet (RUSS)	1980	As a component in circuit experiment	
9	Inductance	4	4	0	France	1997 &2010	As a component in circuit experiment	
10	Alimentation (voltage socket) 6-12V, Pierron	4	4	0	France	1999	As a component in electrical circuit experiment	
11	Alimentation (voltage socket) 6-12V, Pierron	4	4	0	France	1999 & 2010	As a component in electrical circuit	

							experiment	
13	Mcastatique, Pierron	2	1	1	France	1999	To measure magnitude of forces when an object is in equilibrium under several forces applied	
14	Transversal wave demonstrator, Pierron	1	0	1	France	2003	To demonstrate transversal wave	
15	Mechanical Oscillator, Pierron	1	1	0	France	2010	To study and demonstrate mechanical vibration	
16	Pendulum reversible, made in RUSS	1	1	0	Soviet (RUSS)	1980	To study oscillation of a rigid body and determine acceleration of gravity	
17	Simple pendulum, Pierron	5	5	0	France	1997 &2010	To determine acceleration of gravity	
18	Elastic pendulum, Pierron	1	1	0	France	1997		
19	Forced oscillator, Pierron	1	1	0	France	2003	To study the frequency of forced oscillation	
20	Stand of Free fall experiment, Pierron	2	2	0	France	2001	To study free fall motion	
21	Hook's law experiment, Pierron	5	5	0	France	1997 &2003	To check the Hooke's law F = kx	
22	Air track, Jeulin	1	1	0	France	1999	To use as a track of straight line motion and as a base support of collision	
23	Law of perfect gas experiment, Pierron	1	1	0	France	2003	To check law of ideal gas	
24	Calorimeter experiment, Pierron	3	2	1	France	2003	To measure specific heat of a metal	
25	Electrical oven tube, made in RUSS	5	2	3	Soviet (RUSS)	1980	To study linear expansion of a metallic stick and determine its coefficient	
26	Basic optic experiment, Pierron	2	2	0	France	1999	To study the phenomena of refraction, reflection, diffraction of light	
IV. DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE								
1	Vicat Apparatus	2	2	0	CIUF	1994	Setting time	C
2	Viscosity of concrete	1	1	0	CIUF	1994	Viscosity	C
3	Slump test apparatus	2	2	0	CIUF	1994	Slump of concrete	C
4	Cement Filter	1	1	0	CIUF	1994	Fineness modulus	C
5	Air-meter in concrete	1	1	0	CIUF	1994	%Air in concrete	C
6	Balance 60kg	1	1	0	CUD	2000	weighting	C
7	Cement Mixer tester	1	1	0	CIUF	1994	Composite Cimemt+ sand	C
8	Vibration Table	1	1	0	CIUF	1987	Compact of the Concrete	C
9	Cement Sample Compactor	1	1	0	CIUF	1994	Compact of the mortar	C
10	Cement sample Mold	3	2	1	CIUF	1994	Mold for cement	C
11	Concrete Mixer	1	1	0	CIUF	1994	Composite aggregate+sand + cement	C
12	Compression Machine 1250kN	1	1	0	RUSS	1987	Compressive strength of the concrete	C
13	Compression Machine 500kN	1	1	0	RUSS	1987	Compressive strength of the concrete	C
14	Flexion Machine 50kN	1	1	0	RUSS	1987	Traction and bending	C
15	Cart for sample mobilization	1	1	0	RUSS	1987	Sample mobilization	C
16	Compression Machine Walter+Bay 3000kN	1	1	0	CUD	1987	Compressive strength of the concrete	C
17	Universal Testing Machine, Walter+Bay 400kN	1	1	0	CUD	2000	Traction , compression and bending	C
18	Cylinder Mold 16x32CM	12	12	0	CUD	2000	Mold for concrete	C
19	Brasilien Tesing Apparatus	1	1	0	CIUF	2000	Mold for sample traction	C
20	Concrete Shrinkage Measurement Apparatus	1	1	0	CIUF	1994	Shrinkage of the mortar	C
21	Ultrasound Apparatus TICO	1	0	1	CIUF	1994	Compressive strength of the concrete in site	C
22	Ultrasound Apparatus for Steel	1	0	1	CIUF	1994	Verified of the well	C
23	Dumix Apparatus (Deformation Measurement)	1	1	0	CIUF	1994	Module Elasticity of the concrete	C
24	Compression Calibration Apparatus	2	0	2	ITC	1994	For calibration Machine the Compression	C
25	Ultraviolet Apparatus	1	0	1	CIUF	2005	cracking	C
26	Oven-dry	1	0	1	CIUF	1994	Water content	C
27	Consolidation Test Apparatus	3	3	0	CIUF	1994	Module elasticity of soil	B
28	Sieve	5	2	3	CIUF	1994	Define Size distribution of Aggregate	B
29	Direct Shear Test Apparatus, PERRIER	1	0	1	CIUF	1994	Friction angle and cohesion	B
30	CBR Compression Apparatus 0.37KW, 220V-50Hz	1	0	1	CIUF	1994	Bearing capacity of soil for constr. The road	B
31	CBR Mold (Modified)	6	6	0	CIUF	1994	Bearing capacity of soil for constr. The road	B
32	CBR Mold (Standard)	6	6	0	CIUF	1994	Bearing capacity of soil for constr. The road	B
33	Proctor test hammer	3	3	0	CIUF	1994	Bearing capacity of soil	B

							for constr. The road	
34	Liquid Limit Apparatus	5	2	3	CIUF	1994	Characteristic of soil	B
35	Sand Equivalent Apparatus	1	1	0	CIUF	1994	Define Size distribution of sand	B
36	Water Mixer Equipment	1	1	0	CUD	1994	Mixer soil +water	B
37	Manual Drill Equipment	1	1	0	CIUF	1994	Sample of soil	C
38	Pressiometer, SNOR	1	0	1	CIUF	1994	Resistant and module elastic of soil in site	B
39	Microprocessor PERRIER	2	0	2	CIUF	1994	Acquisition data	B
40	Penetrometer PANDA	1	0	1	CIUF	1994	Resistant of soil in site	B
41	Tri-axial Apparatus	1	0	1	CUD	2000	Friction angle and cohesion UU,CU,CD	B
42	Sieve Shaker	1	0	1	CIUF	1994	sieving	B
43	Penetrometer for Asphalt Classification	1	1	0	CIUF	1994	Calcification of asphalt	A
44	Asphalt Viscosity Apparatus	1	1	0	CIUF	1994	Calcification of asphalt	A
45	Mashal Test Apparatus	1	1	0	CUD	2002	Module elastic of asphalt concrete	A
46	Diamond Coring tool DD200, 220/380V	1	1	0	ITC	2005	Sample coring	A
47	Diamond Core bit DD-B152/430P4	1	1	0	ITC	2005	Sample coring	A
48	Los Angeles Abrasion Machine H-3860.5F (Humboldt /Germary)101A	1	1	0	ITC	2010	0	C
49	Vical Consistency Apparatus (Humboldt /Germary)-101A	1	1	0	ITC	2010	Setting time	C
V. DEPARTMENT OF GOE- RESOURCES AND GEO-TECHNICAL ENGINEERING (Japanes Grant Aids)								
1	**Rock specimen**							
2	Typical Rock samples	10	10	0	Japan	March-12	Rock Identification	A
3	Typical 0re samples	5	5	0	Japan	March-12	Rock Identification	A
4	**Thin sections**	20	20	0	Japan	March-12		A
5	**Rock cutting machine**							
6	Cutting machine for large size sample (Slab Saw)	2	2	0	Japan	March-12	Cutting Rock for smooth surface	A
7	With Diamond blade	8	8	0	Japan	March-12	Cutting Rock for smooth surface	A
8	Precision Cutting machine (Blench Saw)	2	2	0	Japan	March-12	Cutting Rock for smooth surface	A
9	With Diamond blade	8	8	0	Japan	March-12	Cutting Rock for smooth surface	A
10	(D=200mm)	2	2	0	Japan	March-12	Cutting Rock for smooth surface	A
11	Rock Vice	8	8	0	Japan	March-12	Cutting Rock for smooth surface	A
12	Thin Section holder	2	2	0	Japan	March-12	Cutting Rock for smooth surface	A
13	**Rock polishing grinder combination type**							
14	Plain Grinder Combined two laps	2	2	0	Japan	March-12	Polish rock for thin section	A
15	Felt Plate	4	4	0	Japan	March-12	Polish rock for thin section	A
16	Glass plate	2	2	0	Japan	March-12	Polish rock for thin section	A
17	**Rock polishing plates**							
18	Iron Plate	20	20	0	Japan	March-12	Polish rock for thin section	A
19	Glass plate	20	20	0	Japan	March-12	Polish rock for thin section	A
20	**Rock polishing powders**			0	Japan	March-12	Polish rock for thin section	A
21	Carborundum Abraisive C#100	16	16	0	Japan	March-12	Polish rock for thin section	A
22	Carborundum Abraisive C#200	12	12	0	Japan	March-12	Polish rock for thin section	A
23	Carborundum Abraisive C#800	10	10	0	Japan	March-12	Polish rock for thin section	A
24	Almina Abraisive C#1500	8	8	0	Japan	March-12	Polish rock for thin section	A
25	Almina Abraisive C#3000	8	8	0	Japan	March-12	Polish rock for thin section	A
26	Almina Abraisive C#8000	5	5	0	Japan	March-12	Polish rock for thin section	A
27	Chrom oxide Abrasive	5	5	0	Japan	March-12	Polish rock for thin section	A
28	**Rock polishing bonding agent**							
29	Lakeside Cement	2000ml	2000ml	0	Japan	March-12	Polish rock for thin section	A
30	Petropxy 154	2.5	2.5	0	Japan	March-12	Polish rock for thin section	A
31	Canada Balsam	2400	2400	0	Japan	March-12	Polish rock for thin section	A
32	**Rock polishing slides glass**	2400	2400	0	Japan	March-12	Polish rock for thin section	A
33	**Rock polishing cover glass**	5	5	0	Japan	March-12	Polish rock for thin section	A

34	**Hot plate**	10	10	0	Japan	March-12	For thin section	A
35	**Stainless Spatula**	2	2	0	Japan	March-12	For thin section	A
36	**Sample plugging ink**	1000	1000	0	Japan	March-12	For thin section	A
37	Polyster Solidifer	2	2	0	Japan	March-12	For thin section	A
38	Acril Monomer	1	1	0	Japan	March-12	For thin section	A
39	Resin Impregnate Apparatus	1	1	0	Japan	March-12	For thin section	A
40	**Monocular polarizing microscope**							
41	Mineral separating machine	20	20	0	Japan	March-12	Mineral Observation	B
42	Binocular poplarizing microscope	1	1	0	Japan	March-12	Mineral Observation	B
43	Trinocular polarizing Metallugical microscope	1	1	0	Japan	March-12	Mineral Observation	B
44	USB Degital Camera	3	3	0	Japan	March-12	For Field Work	B
45	Polishing Felt or cham o is leather	2	2	0	Japan	March-12	Polish rock for thin section	A
46	Hand pression	1	1	0	Japan	March-12	Compress the powder	A
47	X_ray Diffraction Unit	1	1	0	Japan	March-12	Mineral Identification	A
48	UPS& Current stabilize for XRD	1	1	0	Japan	March-12	Mineral Identification	A
49	Strainless Mortar	1	1	0	Japan	March-12	Rock grinding to powder	A
50	Agate Mortar	1	1	0	Japan	March-12	Rock grinding to powder	A
51	Electric Survez equipement	1	1	0	Japan	March-12	Detection of Ore	A
52	Magnetometer	5	5	0	Japan	March-12	Detection of Ore	A
53	GPS	30	30	0	Japan	March-12	Identification of position	A
54	Laser distance meter with digital clinometer	30	30	0	Japan	March-12	Measuring distance and distination	A
55	Magnifier	30	30	0	Japan	March-12	Field Work	A
56	Clinocompass	30	30	0	Japan	March-12	Field Work	A
57	Geological Hammer	30	30	0	Japan	March-12	Field Work	A
58	Streak plate	30	30	0	Japan	March-12	Field Work	A
59	Magnet pensil	30	30	0	Japan	March-12	Field Work	A
60	Scriber pensil	30	30	0	Japan	March-12	Field Work	A
VI. DEPARTMENT OF INDUSTRIAL AND MECHANICAL ENGINEERING								
1	AC Lab General Cycle Trainer	2	2	0	CIUF	2001	Teaching	A 4
2	AC Lab Refrigeration Plant Fault Simulator	1	1	0	CIUF	2001	Teaching	A 4
3	AC Lab Industrial Refrigeration Trainer	1	1	0	CIUF	2001	Teaching	A 4
4	AC Lab Domestic Air Conditioning Trainer	1	1	0	CIUF	2001	Teaching	A 4
5	AC Lab Air Conditioning Trainer	1	1	0	CIUF	2001	Teaching	A 4
6	AC Lab Automotive Air Conditioning Trainer	1	1	0	CIUF	2001	Teaching	A 4
7	Welding machine MIG/MAG, LKB 265/320	1	1	0	N/A	1999	Teaching and Research	A 3
8	ICE Lab Engine Test bed	1	1	0	CIUF	2002	Teaching	A 4
9	Foundation Milling machine, Gambin SA 10 Nº12481	1	1	0	N/A	1998	Teaching and Research	A 2
10	Milling machine, Gambin SA 10 Nº12522	1	1	0	N/A	1998	Teaching and Research	A 1
11	Milling machine, Gambin SA 10 Nº12501	1	1	0	N/A	1998	Teaching and Research	A 1
12	Lathe, 304T	1	1	0	N/A	1998	Teaching and Research	A 1
13	Lathe, 310T	1	Yes*	0	N/A	1998	Teaching and Research	A 1
14	Drill	1	1	0	N/A	1998	Teaching and Research	A 1
15	Lathe, GMBH	2	2	0	CIUF	2003	Teaching and Research	A 1
16	CNC Milling machine	1	1	0	CIUF	2003	Teaching and Research	A 1
17	Manual Tensile Machine	1	1	0	N/A	1995	Teaching and Research	A 1
18	Pendulum impact test bench (Charpy)	1	1	0	N/A	1998	Teaching and Research	A 1
VII. DEPARTMENT OF ELECTRICAL AND ENERGY ENGINEERING								
1	2406E Insulation Testers 240634	2	2	0	BP	2011	Electrotechnic	
2	323511 Earth Tester	2	2	0	ICI	2010	Electrotechnic	
3	Ammeter	38	38	0	AUF	1994	All lab	
4	Analog maquette	15	15	0	AUF	1994	Electronics	
5	Analog oscilloscope	9	9	0	AUF	1997	All lab	
6	Capacimeter	2	2	0	AUF	1997	Electronics	
7	Capacitance	4	4	0	AUF	1997	Electrotechnic	
8	Circuit breaker	5	5	0	AUF	1997	Electrotechnic	
9	Conductors coulors 0.80m	50	50	0	AUF	1997	All lab	
10	Conductors logic 0.30m	30	30	0	AUF	1997	All lab	
11	Conductors coulors 0.40m	30	30	0	AUF	1997	All lab	
12	Conductors coulors 0.80m	30	30	0	AUF	1997	All lab	
13	Conductors coulors 1.00m ($2mm^2$)	30	30	0	AUF	1997	All lab	
14	Conductors coulors 0.20m	50	50	0	AUF	1997	All lab	
15	Conductors coulors 0.30m	50	50	0	AUF	1997	All lab	
16	Conductors coulors 0.40m	50	50	0	AUF	1997	All lab	
17	Conductors coulors 0.60m	50	50	0	AUF	1997	All lab	
18	Conductors coulors 1.00m	50	50	0	AUF	1997	All lab	
19	Conductors coulors 1.20m	50	50	0	AUF	1997	All lab	
20	Conductors coulors0.60m	50	50	0	AUF	1997	All lab	
21	Contactor	1	1	0	AUF	1994	Electrotechnic	
22	Cordon Probe	30	30	0	AUF	1995	All lab	
23	Current probe	2	2	0	AUF	1995	Electrotechnic	
24	Differential oscilloscope	9	9	0	AUF	1997	All lab	
25	Digital maquette	15	15	0	AUF	1994	Electronics	
26	Digital multimter	17	17	0	AUF	1997	All lab	
27	Digital Oscilloscope DL9140	1	1	0	BP	2011	Electrotechnic	
28	Digital Power Meter and accessories	1	1	0	BP	2011	Electrotechnic	
29	Direct current motor	1	1	0	AUF	1995	Electrotechnic	
30	Double channel power supply	12	12	0	AUF	1997	Electrotechnic	
31	Dynamo tachymeter	5	5	0	AUF	1995	Electrotechnic	

32	Generator frequency	12	12	0	AUF	1994	Electronics	
33	Inductance	2	2	0	ITSAKS	1993	Electronics	
34	Induction motor	2	2	0	AUF	1995	Electronics	
35	Lamp indicator	2	2	0	ITSAKS	1993	Electronics	
36	Motor drive training kits	5	5	0	Schneider	2010	Electronics	
37	Ohmeter	6	6	0	AUF	1995	Electronics	
38	Power electronic training kits	1	1	0	FSP	2008	Electronics	
39	Power supply PAD35-10L DC (Kikusui)	2	2	0	FSP	2009	Electronics	
40	Pressure sensor	2	2	0	ICI	2010	Renewable energy	
41	Push contact	2	2	0	ITSAKS	1993	Electrotechnic	
42	Resistance	2	2	0	AUF	1995	Electrotechnic	
43	Rheostar	4	4	0	AUF	1995	Electrotechnic	
44	Single phase induction motor	1	1	0	AUF	1995	Electrotechnic	
45	Single phase transformer	1	1	0	ITSAKS	1993	Electrotechnic	
46	Synchronization box	1	1	0	ITSAKS	1993	Electrotechnic	
47	Tempo	1	1	0	ITSAKS	1993	Electrotechnic	
48	Three phase induction motor	1	1	0	AUF	1995	Electrotechnic	
49	Three phase synchronous generator	1	1	0	AUF	1995	Electrotechnic	
50	Three phase transformer	1	1	0	ITSAKS	1993	Electrotechnic	
51	Transistor 2N 1711	150	150	0	BP	2010	Electronics	
52	Transistor 2N 2219A	100	100	0	BP	2010	Electronics	
53	Transistor 2N 2222A	100	100	0	BP	2010	Electronics	
54	Transistor 2N 2905A	100	100	0	BP	2010	Electronics	
55	Transistor SSM 2210	100	100	0	BP	2010	Electronics	
56	Transistor TEC BF 245	100	100	0	BP	2010	Electronics	
57	Variable alternative current power supply	6	6	0	ITSAKS	1993	Electrotechnic	
58	Variable direct current power supply	3	3	0	AUF	1997	Electrotechnic	
59	Variable resistance	2	2	0	AUF	1995	Electrotechnic	
60	Voltmeter	38	38	0	AUF	1994	All lab	
61	Wattmeter	36	36	0	AUF	1994	All lab	
62	PV module	2	2	0	SIDA	1997	Renewable energy	
63	Radiation solar sensor	2	2	0	ICI	2010	Renewable energy	
64	Battery	2	0	2	REEPRO	2009	Renewable energy	
65	Humidity sensor	2	2	0	ICI	2010	Renewable energy	
66	Inverter	1	1	0	AUF	2010	Renewable energy	
67	Load regulator	1	1	0	VTCL	2007	Renewable energy	
68	Solar water heating system	1	1	0	REEPRO	2009	Renewable energy	
69	Temperature sensor	2	2	0	ICI	2010	Renewable energy	
70	Wind direction sensor	1	1	0	ICI	2010	Renewable energy	
71	Wind flow meter	1	1	0	ICI	2010	Renewable energy	
72	Solar dryer	1	1	0	SIDA	1997	Renewable energy	
73	Rotary inverted pendulum	1	1	0	AUN-See dnet	2011	Control system	
74	Inverted pendulum on card	1	1	0	AUF	2000	Control system	

SOURCE) : ITC

LEGEND:

I. DEPARTMENT OF FOOD TECHNOLOGY AND CHEMICAL ENGINEERING

A. Microbiology
B. Water treatment and Water Quality Control
C. Multi-Aas (Absorption Atomic Spectrophotometer)
D. Food Chemistry
E. General Chemistry
F. Food Technology

II. DEPARTMENT OF COMPUTER SCIENCE

A. Free Self Service Room
B. Computer Network Lab
C. Multi-Purposes Practical Lab
D. Multi-Purposes Practical Lab

IV. DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE

A. Road Construction
B. Soil Mechanic
C. Strength of Material

V. DEPARTMENT OF GOE- RESOURCES AND GEO-TECHNICAL ENGINEERING

Note: These Equipments will supply by Japanes Cultural Grant Aid on March 2012

A.Minerology
B. Petrography

VI. DEPARTMENT OF INDUSTRIAL AND MECHANICAL ENGINEERING

A1. Mechanical Production
A2. Internal Combustion Engine
A3. Welding
A4. Airconditionning

添付資料 3　University of Battambang（UoB）工学系学科カリキュラム

- Department of Nuclear Engineering
- Department of Information Technology
- Department of Civil Engineering

NUCLEAR ENGINEERING

FRESHMAN(36 Credits)					
First Semester (18 credits)			Second Semester (18 credits)		
CODE	Subject Name	Credit	CODE	Subject Name	Credit
NUC1101	General Calculus I	3	FY1	Mathematics	3
NUC1103	Genral Chemistry I	3	NUC1102	General Physics I	3
FY1	Practical Computer	3	NUC1104	Introduction to Computer Programming for engineering	3
FY1	English I	3	FY1	English II	3
FY1	Cambodian History	3	FY1	Philosophy	3
FY1	Introduction to Economics	3	FY1	Public Administration	3
SOPHOMORE(33 Credits)					
First Semester (15 credits)			Second Semester (18 credits)		
CODE	Subject Name	Credit	CODE	Subject Name	Credit
NUC2401	General Calculus II	3	NUC2307	Advanced Calculus I - Nuclear Physics	3
NUC2402	General Physics II	3	NUC2310	Numerical Analysis II	3
NUC2403	General Chemistry II	3	CIV2204	Statistics for Engineer -Structural Analysis I	3
NUC2203	Introduction to Nuclear Eng ineering I	3	NUC2311	Introduction to Nuclear Eng ineering II	3
NUC2309	Numericall Analysis I	3	NUC2406	General Physics III – Electric Field	3
			CIV2203	Technical Drawing, Auto cad	3
JUNIOR(30 Credits)					
First Semester (15 credits)			Second Semester (15 credits)		
CODE	Subject Name	Credit	CODE	Subject Name	Credit
NUC3201	Power Plant Technology I	3	NUC3302	Power Plant Technology II	3
NUC3204	Fluid Mechanics I	3	NUC3308	Fluid Mechanics II	3
NUC2407	Physics IV – Magnetic Field	3	NUC2405	Advanced Calculus II Radiation Application	3
NUC3312	Nuclear Core Startup Experiment Simulation	3	NUC3205	Thermodynamics I	3
NUC3501	Korean Language I (short course)	1	NUC3502	Korean Language II (short course)	1
NUC3408	Engineering English I	2	NUC3409	Engineering English II	2
SENIOR(33 Credits)					
First Semester (18 credits)			Second Semester (15 credits)		

CODE	Subject Name	Credit	CODE	Subject Name	Credit
NUC4202	Nuclear Statics I	3	NUC4303	Nuclear Statics II	3
NUC4206	Nuclear Chemistry and Radiation Application I	3	NUC4301	Nuclear Chemistry and Radiation Application II	3
NUC4306	Thermodynamics II	3	NUC4507	Writing Thesis	3
NUC4508	Research Methodology	3	NUC4600	Research and Thesis	3
NUC4503	Korean Language III (short course)	1	NUC4504	Korean Language IV (short course)	1
NUC4505	Engineering English III	2	NUC4506	Engineering English IV	2
NUC4509	Introduction to Renewable Energy	3			

DEPARTMENT OF INFORMATION TECHONOLOGY

FOUNDATION YEAR

N°	Semester I	Code	Credit	N°	Semester II	code	Credi
1	Khmer history		3	1	Public administration		3
2	Practical computer	IT1001	3	2	Mathematics		3
3	Introduction to economics		3	3	Philosophy		3
4	English 1		3	4	English 2		3
5	Principle of computer 1	IT1002	3	5	Principle of computer 2	IT1003	3
Total			15	Total			

YEAR TWO

N°	Semester I	code	Credit	N°	Semester II	code	Credit
1	Data structure & Algorithm (Apply on C++)	IT2001	3	1	Visual basic programming	IT2006	3
2	Programming in C ++	IT2002	3	2	Data modeling and relational database design I (Apply on MS-Access + SQL)	IT2007	3
3	Computer Maintenance	IT2003	3	3	Internet Programming II Client side Scripting (JavaScript & Vb script & XML)	IT2008	3
4	Internet Programming I Client side (HTML + CSS + Uploading + Dreamweaver)	IT2004	3	4	Data Com. & Network Design	IT2009	3
5	Statistic (SPSS)		3	5	Elective course 1	IT2010	3
6	Graphic Design (Photoshop + Macro Media Flash)	IT2005	3	6	Elective course 2		3
Total			18	Total			18

YEAR THREE

N°	Semester I	code	Credit	N°	Semester II	code	Credit
1	Data modeling and relational database design II (Advanced Access)	IT3001	3	1	Dot Net Programming II (Advanced VB.net)	IT3007	3
2	Network Administration I (Windows)	IT3002	3	2	Network administrator in Linux	IT3008	3
3	Dot Net Programming I (VB.net)	IT3003	3	3	System Administration II (Windows)	IT3009	3
4	Open Source	IT3004	3	4	Programming in C#	IT3010	3
5	Database System (SQL)	IT3005	3	5	Internet programming with (PHP)	IT3011	3
6	Internet programming with ASP.net	IT3006	3	6	System analysis and design	IT3012	3
7	Elective course 3		3	7	Internship (Industry placement)		1
Total			21	Total			19 Cred

YEAR FOUR

N°	Semester I	code	Credit	N°	Semester II	code	Credit
1	Scientific Writing and Communication	IT4001	3	1	Management Information System	IT4007	3
2	Advanced Network administrator in Linux	IT4002	3	2	Security and Network Management	IT4008	3
3	Advance Internet programming with PHP (Database)	IT4003	3	3	Research and Thesis		8
4	Project Management	IT4004	3				
5	Research Methodology	IT4005	3				
6	Object Oriented Programming (Apply on JAVA or C#)	IT4006	3				
Total			18	Total			

DEPARTMENT OF INFORMATION TECHONOLOGY

FOUNDATION YEAR

N°	Semester I	Code	Credit	N°	Semester II	code	Credi
1	Khmer history		3	1	Public administration		3
2	Practical computer	IT1001	3	2	Mathematics		3
3	Introduction to economics		3	3	Philosophy		3
4	English 1		3	4	English 2		3
5	Principle of computer 1	IT1002	3	5	Principle of computer 2	IT1003	3
Total			15	Total			

YEAR TWO

N°	Semester I	code	Credit	N°	Semester II	code	Credit
1	Data structure & Algorithm (Apply on C++)	IT2001	3	1	Visual basic programming	IT2006	3
2	Programming in C ++	IT2002	3	2	Data modeling and relational database design I (Apply on MS-Access + SQL)	IT2007	3
3	Computer Maintenance	IT2003	3	3	Internet Programming II Client side Scripting (JavaScript & Vb script & XML)	IT2008	3
4	Internet Programming I Client side (HTML + CSS + Uploading + Dreamweaver)	IT2004	3	4	Data Com. & Network Design	IT2009	3
5	Statistic (SPSS)		3	5	Elective course 1	IT2010	3
6	Graphic Design (Photoshop + Macro Media Flash)	IT2005	3	6	Elective course 2		3
Total			18	Total			18

YEAR THREE

N°	Semester I	code	Credit	N°	Semester II	code	Credit
1	Data modeling and relational database design II (Advanced Access)	IT3001	3	1	Dot Net Programming II (Advanced VB.net)	IT3007	3
2	Network Administration I (Windows)	IT3002	3	2	Network administrator in Linux	IT3008	3
3	Dot Net Programming I (VB.net)	IT3003	3	3	System Administration II (Windows)	IT3009	3
4	Open Source	IT3004	3	4	Programming in C#	IT3010	3
5	Database System (SQL)	IT3005	3	5	Internet programming with (PHP)	IT3011	3
6	Internet programming with ASP.net	IT3006	3	6	System analysis and design	IT3012	3
7	Elective course 3		3	7	Internship (Industry placement)		1
Total			21	Total			19 Cred

YEAR FOUR

N°	Semester I	code	Credit	N°	Semester II	code	Credit
1	Scientific Writing and Communication	IT4001	3	1	Management Information System	IT4007	3
2	Advanced Network administrator in Linux	IT4002	3	2	Security and Network Management	IT4008	3
3	Advance Internet programming with PHP (Database)	IT4003	3	3	Research and Thesis		8
4	Project Management	IT4004	3				
5	Research Methodology	IT4005	3				
6	Object Oriented Programming (Apply on JAVA or C#)	IT4006	3				
Total			18	Total			

UNIVERSITY OF BATTAMBANG

DEPARTMENT OF CIVIL ENGINEERING

FRESHMAN(36 Credits)					
First Semester (18 credits)			Second Semester (18 credits)		
CODE	Subject Name	Credit	CODE	Subject Name	Credit
CIV1101	General Calculus I	3	FY1	Mathematics	3
CIV1102	**General Chemistry I**	3	CIV1201	General Physics I	3
FY1	Practical Computer	3	CIV1202	**Calculus II**	3
FY1	English I	3	FY1	English II	3
FY1	Cambodian History	3	FY1	Philosophy	3
FY1	Introduction to Economics	3	FY1	Public Administration	3
SOPHOMORE(33 Credits)					
First Semester (15 credits)			Second Semester (18 credits)		
CODE	Subject Name	Credit	CODE	Subject Name	Credit
CIV2101	**Computer Programming (c++)**	3	CIV2201	Numerical Analysis II	3
CIV2102	General Physics II	3	CIV2202	**Strength of Materials II**	3
CIV2103	**General Chemistry II**	3	CIV2203	**Technical Drawing** **Practical Auto CAD**	1.5 1.5
CIV2104	Numerical Analysis I	3	CIV2204	**Structural Analysis I**	3
CIV2105	**Strength of Materials I**	3	CIV2205	**Architecture I**	3
			CIV2206	Physics III	3
JUNIOR(30 Credits)					
First Semester (15 credits)			Second Semester (15 credits)		
CODE	Subject Name	Credit	CODE	Subject Name	Credit
CIV3101	**Structural Analysis II**	3	CIV3201	**Computer Method for Structural Analysis Problems**	3
CIV3102	**Architecture II**	3	CIV3202	**Reinforced Concrete Structure 2**	3
CIV3103	Survey Engineering	3	CIV3203	**Steel Structure**	3
CIV3104	**Construction Materials**	3	CIV3204	**Soils Mechanics**	3
CIV3105	**Reinforced Concrete Structure I**	3	CIV3205	**Foundation Engineering**	3

SENIOR(35 Credits)					
First Semester (15 credits)			Second Semester (18 credits)		
CODE	Subject Name	Credit	CODE	Subject Name	Credit
CIV4101	**Road and Bridge**	6	CIV4201	**Construction Organization**	3
CIV4102	**Construction Technology**	3	CIV4202	**Safety in Construction**	2
CIV4103	**Water Supply and Drainage**	2	CIV4203	**Research Methodology**	2
CIV4104	**Microsoft Project Engineering**	3	CIV4204	Research and Thesis	8
CIV4105	Korean Language I (short course)	1	CIV4205	Korean Language II (short course)	1
CIV4106	Engineering English I	2	CIV4206	Engineering English II	2

添付資料 4　Svay Rieng University（SRU）工学系学科カリキュラム

- Department of Agronomy
- Department of Rural Development

ព្រះរាជាណាចក្រកម្ពុជា
KINGDOM OF CAMBODIA

ជាតិ សាសនា ព្រះមហាក្សត្រ
Nation Religion King

សាកលវិទ្យាល័យស្វាយរៀង
Svay Rieng University

មហាវិទ្យាល័យ កសិកម្ម
Faculty of Agriculture

កម្មវិធីសិក្សាមហាវិទ្យាល័យ កសិកម្ម
Faculty of Agriculture Curriculum

I.ដេប៉ាតឺម៉ង់: ក្សេត្រសាស្ត្រ (Department Agronomy)

. First Academic Year (Department of Foundation Year)

Semester	N°	Subjects in Khmer	Subjects in English	Hours	Credits
First Semester	1	ទស្សនវិជ្ជា	Philosophy	30	2
	2	កុំព្យូទ័រអនុវត្តន៍	Computer Application	45	3
	3	ជីវវិទ្យា	Biology	30	2
	4	សេចក្តីផ្តើមនៃសេដ្ឋកិច្ច	Introduction to Economics	45	3
	5	ភាសាអង់គ្លេសកំរិត១ ក	Business English 1.A	45	3
	6	ឧតុនិយម	Meteorology	45	3
Total				240	16
Second Semester	1	ប្រវត្តិសាស្ត្រខ្មែរ	Khmer History	30	2
	2	គីមីវិទ្យា	Chemistry	30	2
	3	ភូមិវិទ្យាសេដ្ឋកិច្ច និងផែនទីវិទ្យា	Economics Geography and Map	45	3
	4	ភាសាអង់គ្លេសកំរិត១ ខ	Business English 1.B	45	3
	(5)	សត្តវិទ្យា	Zoology	45	3
	(6)	រុក្ខវិទ្យា	Botany	30	2
Total				225	15

. Second Academic Year

Semester	N°	Subjects in Khmer	Subjects in English	Hours	Credits
First Semester	1	វិទ្យាសាស្ត្រដី និងការវិភាគដី	Soil Science and Analysis	48	3
	2	សង្គមវិទ្យាជនបទ	Rural Sociology	48	3
	3	មីក្រូហិរញ្ញវត្ថុ	Microfinance	48	3
	4	កសិកម្ម និង បរិស្ថាន	Agriculture and Environment	48	3
	5	វិទ្យាសាស្ត្រដំណាំ	Crop Science	48	3
	6	ភាសាអង់គ្លេសកសិកម្ម ភាគ១	English for Agriculture Part 1	48	3
Total				288	18
Second Semester	1	វិធីសាស្ត្រអង្កេត	Survey Methodology	48	3
	2	ការគ្រប់គ្រងព្រៃឈើ	Forest Management	48	3
	3	ការគ្រប់គ្រងបរិស្ថាន	Farm Management Fiel Study	48	3
	4	អេកូឡូស៊ី	Ecology Fiel. Study	48	3
	5	វិទ្យាសាស្ត្រសត្វ និងប្រព័ន្ធបសុសត្វ	Animal Science and Livestock System	48	3
	6	ភាសាអង់គ្លេសកសិកម្ម ភាគ២	English for Agriculture Part 2	48	3
Total				288	18

. Third Academic Year

Semester	N°	Subjects in Khmer	Subjects in English	Hours	Credits
First Semester	1	រុក្ខជាតិចង្រៃ	Weed Science field Study	48	3
	2	ការរៀបចំសហគមន៍	Community Organization	48	3
	3	ដំណាំស្រូវ	Rice Culture	48	3
	4	បង្កាត់ដំណាំ	Crop Breeding green house	48	3
	5	ផលិតកម្មបន្លែ	Vegetable Production Field Study	48	3
	6	វារីវប្បកម្ម	Aquaculture	48	3
Total				288	18
Second Semester	1	ការគ្រប់គ្រងក្រោយការប្រមូលផល និងការកែច្នៃអាហារ	Post-harvest Management & Food Processing	48	3
	2	បាណកវិទ្យា	Entomology field study	48	3
	3	ផលិតកម្មដំណាំកៅស៊ូ	Rubber Production	48	3
	4	ផលិតកម្មដំណាំកសិឧស្សាហកម្ម	Agro-Industrial Crop Production	48	3
	5	ផលិតកម្មផ្សិត	Mushroom Production field study	48	3
	6	វិធីសាស្ត្រស្រាវជ្រាវសម្រាប់ក្សេត្រសាស្ត្រ ភាគ ១	Statistical Research Method for AGN Part 1 field study	48	3
Total				288	18

. Fourth Academic Year

Semester	N°	Subjects in Khmer	Subjects in English	Hours	Credits
First Semester	1	វិធីសាស្ត្រស្រាវជ្រាវសម្រាប់ក្សេត្រសាស្ត្រ ភាគ ២	Statistical Research Method for AGN Part 2	48	3
	2	កុំព្យូទ័រអនុវត្តន៍សម្រាប់វិភាគទិន្នន័យ	Computer Application for Data Analysis	48	3
	3	ផលិតកម្មឈើហូបផ្លែ	Fruit Tree Production field study	48	3
	4	ប្រព័ន្ធស្រោចស្រព	Irrigation System field study	48	3
	5	ភូតគាមរោគវិទ្យា	Plant Pathology field study	48	3
	6	ការសរសេរឯកសារវិទ្យាសាស្ត្រ, របាយការណ៍ និងការធ្វើបង្ហាញ	Scientific Writing, Report and Presentation	48	3
Total				288	18
Second Semester		ការសរសេរសារណាបទ	Writing Thesis	128	8
Total				2 033	129

II. ដេប៉ាតឺម៉ង់: **អភិវឌ្ឍន៍ជនបទ** (Department Rural Development)

. First Academic Year (Department of Foundation Year)

Semester	N⁰	Subjects in Khmer	Subjects in English	Hours	Credits
First Semester	1	ទស្សនវិជ្ជា	Philosophy	30	2
	2	កុំព្យូទ័រអនុវត្តន៍	Computer Application	45	3
	3	ជីវវិទ្យា	Biology	30	2
	4	សេចក្តីផ្តើមនៃសេដ្ឋកិច្ច	Introduction to Economics	45	3
	5	ភាសាអង់គ្លេសកំរិត១ ក	Business English 1.A	45	3
	6	ឧតុនិយម	Meteorology	45	3
Total				240	16
Second Semester	1	ប្រវត្តិសាស្ត្រខ្មែរ	Khmer History	30	2
	2	គីមីវិទ្យា	Chemistry	30	2
	3	ភូមិវិទ្យាសេដ្ឋកិច្ច និងផែនទីវិទ្យា	Economics Geography and Map	45	3
	4	ភាសាអង់គ្លេសកំរិត១ ខ	Business English 1.B	45	3
	5	សត្តវិទ្យា	Zoology	45	3
	6	រុក្ខវិទ្យា	Botany	30	2
Total				225	15

. Second Academic Year

Semester	N⁰	Subjects in Khmer	Subjects in English	Hours	Credits
First Semester	1	វិទ្យាសាស្ត្រដី និងការវិភាគដី	Soil Science and Analysis	48	3
	2	សង្គមវិទ្យាជនបទ	Rural Sociology	48	3
	3	មីក្រូហិរញ្ញវត្ថុ	Microfinance	48	3
	4	កសិកម្ម និង បរិស្ថាន	Agriculture and Environment	48	3
	5	វិទ្យាសាស្ត្រដំណាំ	Crop Science	48	3
	6	ភាសាអង់គ្លេសកសិកម្ម ភាគ១	English for Agriculture Part 1	48	3
Total				288	18
Second Semester	1	វិធីសាស្ត្រអង្កេត	Survey Methodology	48	3
	2	ការគ្រប់គ្រងព្រៃឈើ	Forest Management	48	3
	3	ការគ្រប់គ្រងបរិស្ថាន	Farm Management	48	3
	4	អេកូឡូស៊ី	Ecology	48	3
	5	វិទ្យាសាស្ត្រសត្វ និងប្រព័ន្ធបសុសត្វ	Animal Science and Livestock System	48	3
	6	ភាសាអង់គ្លេសកសិកម្ម ភាគ២	English for Agriculture Part 2	48	3
Total				288	18

. Third Academic Year

Semester	N°	Subjects in Khmer	Subjects in English	Hours	Credits
First Semester	1	ការគ្រប់គ្រង និងប្រើប្រាស់ដី	Land Use Management	48	3
	2	ការរៀបចំសហគមន៍	Community Organization	48	3
	3	កសិពាណិជ្ជកម្ម	Agri-Business	48	3
	4	ការអភិវឌ្ឍជនបទ	Rural Development	48	3
	5	ផលិតកម្មដំណាំកសិកឧស្សាហកម្ម	Agro-Industrial Crop Production	48	3
	6	ការអភិវឌ្ឍសកម្មភាពមិនមែនកសិដ្ឋាន	Non-Farm Activity Development	48	3
Total				288	18
Second Semester	1	យុទ្ធសាស្ត្រសម្រាប់កសិកម្ម	Strategy for Agriculture	48	3
	2	សេដ្ឋកិច្ចកសិកម្ម	Economics for Agriculture	48	3
	3	ភាពជាអ្នកដឹកនាំក្នុងការអភិវឌ្ឍសហគមន៍	Leadership in Community Development	48	3
	4	កសិទេសចរណ៍	Agro-Tourism	48	3
	5	ខ្សែចង្វាក់ផលិតកម្ម	Product Value Chain	48	3
	6	វិធីសាស្ត្រស្រាវជ្រាវសម្រាប់អភិវឌ្ឍន៍ជនបទ ភាគ ១	Statistical Research Method for RUD Part 1	48	3
Total				288	18

. Fourth Academic Year

Semester	N°	Subjects in Khmer	Subjects in English	Hours	Credits
First Semester	1	វិធីសាស្ត្រស្រាវជ្រាវសម្រាប់អភិវឌ្ឍន៍ជនបទ ភាគ ២	Statistical Research Method for RUD Part 2	48	3
	2	កុំព្យូទ័រអនុវត្តន៍សម្រាប់វិភាគទិន្នន័យ	Computer Application for Data Analysis	48	3
	3	ការអភិវឌ្ឍសហគ្រាស	Rural Enterprise	48	3
	4	ការគ្រប់គ្រងធនធានធម្មជាតិ	National Resource Management	48	3
	5	គោលនយោបាយអភិវឌ្ឍន៍ជនបទ	Rural Development Policy	48	3
	6	ការសរសេរឯកសារវិទ្យាសាស្ត្រ, របាយការណ៍ និងការធ្វើបង្ហាញ	Scientific Writing, Report and Presentation	48	3
Total				288	18
Second Semester	1	វិស្វកម្មជនបទ	Rural Engineering	48	3
	2	ការគ្រប់គ្រងគម្រោងជនបទ	Rural Project Management	48	3
	3	ការគ្រប់គ្រងគ្រោះមហន្តរាយ និង ជំលោះជនបទ	Rural Conflict and Disaster Management	48	3
	4	ស្រាវជ្រាវកសិកម្ម បណ្តុះបណ្តាល និង ផ្សព្វផ្សាយកសិកម្ម	Agricultural Research, Training and Extension	48	3
	5	សរសេរបាយការណ៍/សរសេរសារណាបទ	Project Paper / Thesis	128	8
Total				320	20
Total				2 225	141

添付資料 5　Meanchey University（MCU）工学関連学科カリキュラム

- Department of Agro-Industry
- Department of Agronomy
- Department of Animal Science and Veterinary Medicine
- Department of Agriculture Mechanical Engineering

Kingdom of Cabodia

Nation Religion King

Curriculum for Faculty of Agriculture and Food Processing

1. Department : Agro-Industry (BA) Total Credit 150

YEAR ONE

Semester One	Crs	Code	Semester Two	Crs	Code
Philosophy	3	(3:0)	Introduction of Sociology	3	(3:0)
Analy Matematic	3	(2:1)	Basic Computer	3	(2:1)
Basic Administration	3	(2:1)	Khmer Study	3	(3:0)
General English I	3	(2:1)	General English II	3	(3:0)
Chemistry	3	(2:1)	Biology	3	(2:1)

YEAR TWO

Semester One	Crs	Code	Semester Two	Crs	Code
Agri-business	2	(2:0)	Postharvest of cereal	2	(1:1)
Postharvest Technology of Fruit & Vegetable	3	(2:1)	Food Safety	3	(2:1)
General Microbiology	3	(2:1)	Food Nutrition	2	(1:1)
Beverage Technology	3	(2:1)	Food Preservation	2	(1:1)
Food Chemistry	3	(2:1)	Food Packaging Technology	2	(1:1)
Food Processing Technology (I)	3	(2:1)	Starch and Sugar Technology	3	(2:1)
Food Fermentation	2	(1:1)	Bakery Technology	3	(2:1)
General English	3	(3:0)	Brewing Technology	3	(2:1)
			General English	3	(3:0)
Total Creditds	**22**		**Total Credits**	**23**	

YEAR THREE

Semester One	Crs	Code	Semester Two	Crs	Code
Postharvest Technology of Meat	2	(1:1)	Advanced Food Microbiology	3	(2:1)
Brewing Engineering	3	(2:1)	Postharvest of Fish of Seafood	2	(1:1)
Food Biochemistry	3	(2:1)	Advanced Food Packaging	2	(1:1)
Food Processing Technology (II)	3	(2:1)	Food Analysis	3	(2:1)
Alcoholic Technology	2	(1:1)	Food Marketing& Product Dev't Man't	3	(1:1)
Food Engineering (I)	3	(2:1)	Food Engineering (II)	3	(2:1)
Oilseed Technology	2	(1:1)	Food Industry Management	3	(2:1)
Diary Technology	2	(1:1)	Physio-Chemistry Properties of Food	2	(1:1)
English in Agriculture	3	(3:0)	IELTs preparation	3	(3:0)
Field Trip	1	(0:1)			
Total Credits	**24**		**Total Credits**	**24**	

YEAR FOUR

Semester One	Crs	Code	Semester Two	Crs	Code
Reserch Methodlogy	2	(2:0)	THESIS	10	10
Industrial Feasibility Study and Firm Creation	3	(2:1)			
Quality Control of Agri-Food Product	3	(2:1)			
Total Productive Management	3	(3:1)			
Applied Statistics	3	(2:1)			
Agricultural Waste Management	2	(2:1)			
Seminar	1	(1:1)			
Total Credits	**17**		**Total Credits**	**10**	

2. Department : Agronomy (BA) Total Credit 150

YEAR ONE

Semester One	Crs	Code	Semester Two	Crs	Code
Philosophy	3	(3:0)	Introduction of Sociology	3	(3:0)
Analy Matematic	3	(2:1)	Basic Computer	3	(2:1)
Basic Administration	3	(2:1)	Khmer Study	3	(3:0)
General English I	3	(2:1)	General English II	3	(3:0)
Chemistry	3	(2:1)	Biology	3	(2:1)

YEAR TWO

Semester One	Crs	Code	Semester Two	Crs	Code
General Microbiology	3	(2:1)	Irrigation system	3	(2:1)
Plant physiology	3	(2:1)	Vegetable Crops	3	(1:2)
Plant Biochemistry	3	(2:1)	Agro-chemistry	3	(1:2)
Plant Genetics	3	(2:1)	Farming system	3	(2:1)
Agri-business	2	(2:0)	Argicultural extension	2	(1:1)
Botany	3	(2:1)	Plant Breeding	3	(1:2)
General English	3	(3:0)	General English	3	(3:0)
Enviroment	3	(3:0)	Mushroom production	2	(1:1)
			Postharvest of Cereal	2	
Total Credits	**23**		**Total Credits**	**24**	

YEAR THREE

Semester One	Crs	Code	Semester Two	Crs	Code
Soil Science	3	(2:1)	Soil Fertility Management	3	(2:1)
Entomology	3	(1:2)	Horticulture	3	(2:1)
Cereal Crops	3	(1:2)	Plant Nutrition	2	(1:1)
Fruit Crops	3	(2:1)	Weed science	3	(2:1)
Intergrated Pest Management (IPM)	3	(2:1)	Industrial crops	3	(2:1)
Plant Pathology	3	(1:2)	Agricultural ecology	3	(2:1)
English in Agriculture	3	(3:0)	IELTs preparation	3	(3:0)
Bee keeping	2	(1:1)	Seed Production	3	(2:1)
Field Trip	1				
Total Credits	**24**		**Total Credits**	**23**	

YEAR FOUR

Semester One	Crs	Code	Semester Two	Crs	Code
Plant Quarantine	2	(2:0)			
Soil Chemistry	3	(2:1)			
Applied Statistic	3	(2:1)			
Research Methodlogy	2	(2:0)	THESIS	10	
Seminar	1	(1:0)			
Ornamental plant	2	(1:1)			
Plant Biotechnology	3	(2:1)			
Total Credits	**16**		**Total Credits**	**10**	

3.Department of Animal Science and Veterinary Medicine

Total Credit 150

YEAR ONE

Semester One	Crs	Code	Semester Two	Crs	Code
Philosophy	3	(3:0)	Introduction of Sociology	3	(3:0)
Analy Matematic	3	(2:1)	Basic Computer	3	(2:1)
Basic Administration	3	(2:1)	Khmer Study	3	(3:0)
General English I	3	(2:1)	General English II	3	(3:0)
Chemistry	3	(2:1)	Biology	3	(2:1)

YEAR TWO

Semester One	Crs	Code	Semester Two	Crs	Code
Animal Physiology	3	(2:1)	Animal Nutrition	3	(2:1)
General Microbiology	3	(2:1)	Animal Genetics and Breeding	3	(2:1)
Animal Pathology	3	(2:1)	Parasitology	3	(2:1)
Animal Anatomy	3	(2:1)	Animal welfare	2	(2:0)
Embryology, cytology & Histology	3	(2:1)	Pharmacology	3	(2:1)
Pig Production	3	(2:1)	Agricultural Extension	2	(1:1)
Agri-Business	2	(2:0)	Animal Breed	3	(2:1)
General English	3	(3:0)	General English	3	(3:0)
Total Credit	**23**		**Total Credit**	**22**	

YEAR THREE

Semester One	Crs	Code	Semester Two	Crs	Code
Artificial Insemination	3	(2:1)	Immunology	3	(2:1)
Poultry Production	3	(2:1)	Suchgery	3	(2:1)
Epidemiology	3	(2:1)	Obstetric and Gynecology	3	(2:1)
Forage and Pasture	3	(2:1)	Ruminant Production	3	(2:1)
Animal Housing and Hygiene	3	(2:1)	Non-Infectious Disease	3	(2:1)
Postharvest technology of meat	2	(1:1)	Disease Diagnosis and clinics	3	(2:1)
Bee Keeping	2	(1:1)	Veterinary Public Health and Zoonosis	3	(2:1)
Field Trip	1	(1:0)	IELTs Preparation	3	(3:0)
English in Agriculture	3	(3:0)			
Total Credit	**23**		**Total Credit**	**24**	

YEAR FOUR

Semester one	Crs	Code	Semester Two	Crs	Code
Dairy Cattle	3	(2:1)			
Animal Farm Management	3	(2:1)			
Meat Inspection	3	(2:1)			
Veterinary Legislation	3	(2:1)	THESIS	10	
Applied Statistic	3	(2:1)			
Research methodology	2	(1:1)			
Seminar	1	(1:0)			
Total Credit	**18**		**Total Credit**	**10**	

4. Department : Agriculture Mechanical Engineering (BA) Total Credit 150

YEAR ONE

Semester One	Crs	Code	Semester Two	Crs	Code
Philosophy	3	(3:0)	Introduction of Sociology	3	(3:0)
Analy Matematic	3	(2:1)	Basic Computer	3	(2:1)
Basic Administration	3	(2:1)	Khmer Study	3	(3:0)
General English I	3	(2:1)	General English II	3	(3:0)
Introduction of Agriculture Engineering	3	(2:1)	Physic	3	(2:1)

YEAR TWO

Semester One	Crs	Code	Semester Two	Crs	Code
Engineering Drawing	3	(2:1)	Strength of material	3	(3:0)
Fundamental Engine	3	(2:1)	Combustion	3	(2:1)
Basic Electricity and Electronic	3	(2:1)	Electrical Engineering	3	(2:1)
Agribusiness	2	(2:0)	Cutting and Welding technique	3	(2:1)
Emission Control System	3	(2:1)	Transmission & Final drive system	2	(1:1)
GIS	3	(2:1)	Maintenance & Repair	3	(2:1)
Basic Hydraulic and Phneumatic	3	(2:1)	AutoCAD for mechanical engineering	3	(2:1)
Land Elevation	2	(2:1)	General English	3	(3:0)
General English	3	(3:0)	Tractor and Power Unit	3	(2:1)
			Workshop technology	2	(0:1)
Total Credits	**25**		**Total Credits**	**28**	

YEAR THREE

Semester One	Crs	Code	Semester Two	Crs	Code
Soil Mechanic	3	(2:1)	Refrigeration & Airconditioning	3	(2:1)
Hydrology	3	(3:0)	Agro-food unit operation	3	(2:1)
Irrigation and rural road Engineering	3	(2:1)	Food prcessing technology	3	(2:1)
Pump and Blower	3	(2:1)	Farm Machinery Management	3	(2:1)
Ground water and well engineering	3	(2:1)	Postharvest Enginnering	3	(2:1)
Soil & Water Conservation Engineering	3	(2:1)	Food Enginnering	3	(3:0)
English in Agriculture	3	(3:0)	Environmental Imapct Assessment	3	(3:0)
Field Trip	1	(0:1)	IELTs Preparation	3	(3:0)
Total Credits	**22**		**Total Credits**	**24**	

YEAR FOUR

Semester One	Crs	Code	Semester Two	Crs	Code
Applied Starcistic	3	(2:1)	THESIS	10	10
Reserch Methodology	2	(2:0)			
Renewable Energy	3	(3:0)			
Seminar	1	(1:0)			
Agricultural Waste Management	2	(2:0)			
Total Credits	**11**		**Total Credits**	**10**	

Prepar by

Ngy Socheat

添付資料６　ノートン大学工学系学科カリキュラム

Curricula in College of Sciences, Norton University

Department of Civil Engineering, Department of Electronic and Electrical Engineering

Curriculum in Department of Civil Engineering

Year	Semester I		Semester II	
	Subject	**Session**	**Subject**	**Session**
Year I	English 1A	3	Core English 1B	3
	Human & Society	2	Khmer Studies	2
	Introduction to Computer	2	Mathematic for Engineering II	2
	Mathematic for Engineering I	2	Principle of Economics	2
	Principle of Business	2	Software Application	2
	Total	**11**		
Year II	Auto CAD (2D)	2	Electricity in Building	2
	Chemistry for Engineering	2	Engineering Geology	1
	Engineering Drawing	2	Engineering Tool & Operation	1
	Mathematics for Engineering III	2	Concrete mix design	2
	Physics for Engineering I	2	Physics for Engineering II	2
	Core English	2	Theory of Mechanics	2
	English for Engineering (Writing)	2	Core English	2
			English for Engineering (Writing)	2
	Total	**14**	**Total**	**14**
Year III	Architectural Design for CE	2	Engineering Surveying	**3**
	Construction Technology	2	Fluid Mechanics and Hydraulic Engineering II	2
	Fluid Mechanics and Hydraulic Engineering I	2	Soil Mechanics & Foundations II	2
	Hydrology	1	Strength of Materials II	2
	Soil Mechanics & Foundations I	3	Structural Analysis II	2
	Strength of Material I	2	Transportation and Planning	2
	Structural Analysis I	2	Wooden Design	1
	Total	**14**	**Total**	**14**
Year IV	Auto Land Development	2	Construction Management & Analysis II	2
	Construction Management & Analysis I	2	Earthen dam design and Slope protections	2
	Reinforced concrete Design I	3	GIS and remote sensing	2
	Road construction I	2	Pre-stressed Concrete	2
	Sanitary Engineering Design	2	Project Planning & Implementation	2
	Steel Design	3	Reinforced concrete Design II	2
			Road construction II	2
	Total	**14**	**Total**	**14**
Year V	Bridge Construction	3	Internship and paper writing	-
	Law and Rule of Construction	1		
	Program Robot	2		
	Internship and preparation of paper writing	-		
	Total	**6**	**Total**	**-**

Curriculum in Department of Electrical and Electronic Engineering

Year	Semester I		Semester II	
	Subject	**Session**	**Subject**	**Session**
I	Core and Writing English	4	Core and Writing English	4
	Mathematics for Engineering	2	Mathematics for Engineering	2
	Introduction to Computer	2	Physics	2
	Principle of Economics	2	Principle of Business	2
	Khmer Studies	2	Human and Society	2
	Total	**12**	**Total**	**12**
II	Core and Writing English	4	Core and Writing English	4
	Programming in C	1	MatLab Application	1
	Physics	2	Physics	2
	Computer Network	1	Analog Electronic I	2
	Mathematics for Engineering I	2	Heat Transfer	2
	Engineering Drawings	2	Digital Electronic I	2
	Electrical Circuit Analysis I	2	Electrical Circuit Analysis II	1
	Total	**14**	**Total**	**14**
III	Advance Mathematics for Engineering	2	Microprocessor I	**2**
	Analog Electronic II	2	Electrical Machines II	1
	Sensors and Interfaces	2	Power Electronics I	2
	Digital Electronics II	1	Renewable Energy and Technology	1
	Electrical Machines I	2	Electrical System Design for Building	2
	Industrial Equipments	2	Electromagnetic Theory I	2
	Analog Filter	2	Signal and System	1
			IC design with VHDL tools	2
	Total	**13**	**Total**	**13**
IV	Digital Filters	1	Feedback Controls II	1
	Microprocessor II	1	Motor Drives	2
	Feedback Controls I	2	Network and Distribution II	2
	Power Electronic II	1	Waves and Propagations	1
	Electric Power Stations	2	Optical Communication	2
	Network and Distribution I	1	Telecommunication Systems I	**2**
	Electromagnetic Theory II	1	Virtual Instruments	2
	Modulation	2	Modeling and Control Power Electronics	2
	Industrial Power Supply	2		
	Total	**13**	**Total**	**14**
V	Engineering Project Managements	2	Internship and paper writing	-
	Power System Optimization	2		
	Waves and Propagation	2		
	High Voltage Engineering	2		
	Telecommunication Systems II	2		
	Data Communications	2		
	Electromagnetic Compatibility	2		
	Total	**14**	**Total**	**-**

添付資料 7　National Technical Training Institute（NTTI）既存機材リスト

List of Existing Equipment in NTTI

No.	Equipment Name	Quantity	Conditions		Provided by	Provided in the year of	Purpose of Usage
			Usable	Not usable			
I	**ELECTRICAL LABORATORY**						
1	Standing fan	1	1	0	NTTI	2000	Lab experiment
3	Kyocera water pump	1	1	0	NTTI	2003	Lab experiment
4	Pump Booster	1	1	0	NTTI	2003	Lab experiment
5	Koyocera panels 60w	2	2	0	NTTI	2003	Lab experiment
7	Siemens solar panel	1	1	0	NTTI	2003	Lab experiment
8	Stappower inverter 250v	1	1	0	NTTI	2003	Lab experiment
9	Digital L . meter, C. meter	1	1	0	ADB	2003	Lab experiment
10	Transformer 3ph.	4	4	0	ADB	2003	Lab experiment
11	Function generator	16	16	0	ADB	2002	Lab experiment
12	Tektronix SO 9002	6	6	0	ADB	2002	Lab experiment
13	Volmeter (CA.402)	6	6	0	ADB	2002	Lab experiment
14	Amperemeters (CA.401	6	6	0	ADB	2002	Lab experiment
15	Power supply	12	12	0	ADB	2002	Lab experiment
16	Digital multimeter	13	13	0	ADB	2002	Lab experiment
17	Logital Trainer	12	12	0	ADB	2002	Lab experiment
20	Trainer	12	12	0	ADB	2002	Lab experiment
21	Digital trainer	13	13	0	ADB	2002	Lab experiment
22	Analoge Oscilloscope	6	6	0	ADB	2002	Lab experiment
23	Digital real - time Oscilloscope	6	6	0	ADB	2002	Lab experiment
24	Capacitance decade	12	12	0	ADB	2002	Lab experiment
25	Resistence decate	12	12	0	ADB	2002	Lab experiment
26	Inductance decade	12	12	0	ADB	2002	Lab experiment
27	Distortion meter	2	2	0	ADB	2002	Lab experiment
28	Programmers(TSX17.20)	2	2	0	ADB	2002	Lab experiment
29	Motor tree-phase	2	2	0	ADB	2002	Lab experiment
30	Alternator	2	2	0	ADB	2002	Lab experiment
31	Brake	2	2	0	ADB	2002	Lab experiment
32	Measurement (Dynamo tachy)	2	2	0	ADB	2002	Lab experiment
33	Synchronnoscop (Laboratory)	1	1	0	ADB	2002	Lab experiment
34	DC / Motors speed controllers	6	6	0	ADB	2002	Lab experiment
35	Temperature regulator	1	1	0	ADB	2002	Lab experiment
36	Convertor analog (REF.3810)	6	6	0	ADB	2002	Lab experiment
37	Convertor digital (REF.3806)	3	3	0	ADB	2002	Lab experiment
38	AC/DC Converter CO-1000	6	6	0	ADB	2002	Lab experiment
39	Hacheur 4 quadrants	5	5	0	ADB	2002	Lab experiment
40	Spectrum analyzer	2	2	0	ADB	2002	Lab experiment
41	Transformer (220/110V)	12	12	0	ADB	2002	Lab experiment
42	Laboratory cable	300	300	0	ADB	2002	Lab experiment
43	AC VAR5	1	1	0	ADB	2002	Lab experiment
44	Weco PSY BORDAUX	6	6	0	ADB	2002	Lab experiment
45	LEADER Analog Oscilloscope 50MHz, LS8050	4	4	0	ADB	2002	Lab experiment
46	Digtal LCR Meter, LRC-01130	4	4	0	ADB	2002	Lab experiment
47	DER EE T-360 anlog multimeter	2	2	0	ADB	2002	Lab experiment
48	Digital Mulmeters	5	5	0	ADB	2002	Lab experiment
49	Sweep/Function generator Protek B810	4	4	0	ADB	2002	Lab experiment
50	Sensor application trainer ED-6800B	4	4	0	ADB	2002	Lab experiment
51	Adujustable Power supply 0-30 volt / 0-3Amp	4	4	0	ADB	2002	Lab experiment
52	Power Electronic trainer ED-2040	2	2	0	ADB	2002	Lab experiment
53	Logic Lab Unit ED-1000B	4	4	0	ADB	2002	Lab experiment
II	**CIVIL CONSTRUCTION**						
1	**1. Consolidation Apparatus:**				ADB	2002	**To determine the consolidation characteristic of soil**

2	Consolidation frames	3	3	0	ADB	2002	To determine the consolidation characteristic of soil
3	Dial gauge12.7mm	3	3	0	ADB	2002	To determine the consolidation characteristic of soil
4	10mm displacement	3	3	0	ADB	2002	To determine the consolidation characteristic of soil
5	Set of weight,100kg	3	3	0	ADB	2002	To determine the consolidation characteristic of soil
6	Consolidation Cell complete	3	3	0	ADB	2002	To determine the consolidation characteristic of soil
7	Calibration dise	3	3	0	ADB	2002	To determine the consolidation characteristic of soil
8	Timer clock	1	1	0	ADB	2002	To determine the consolidation characteristic of soil
9	Floor mounting stand	1	1	0	ADB	2002	To determine the consolidation characteristic of soil
10	**2. Direct/ASTM D3080,BS1377**				ADB	2002	**To measure the shear strength properties of soil**
11	2KN Clamped boss load ring	1	0	1	ADB	2002	To measure the shear strength properties of soil
12	Dial gauge 10mmtravel x 0.002mm	1	0	1	ADB	2002	To measure the shear strength properties of soil
13	Digital direct/residual, 1010x290x440mm	1	0	1	ADB	2002	To measure the shear strength properties of soil
14	Set or weights,50slotted		0		ADB	2002	To measure the shear strength properties of soil
15	Dial gauge 10mmtravel x 0.01mm	1	0	1	ADB	2002	To measure the shear strength properties of soil
16	Shear box assembly 2.5 inch	1	0	1	ADB	2002	To measure the shear strength properties of soil
17	Specimen extrusion tool 2.5 inch	2	0	2	ADB	2002	To measure the shear strength properties of soil
18	Specimen cutter2.5 inch	1	0	1	ADB	2002	To measure the shear strength properties of soil
19	3kn clamped box load ring	1	0	1	ADB	2002	To measure the shear strength properties of soil
20	Shear box assembly 60 mm square	1	0	1	ADB	2002	To measure the shear strength properties of soil
21	- Specimen cutter60mm square	1	0	1	ADB	2002	To measure the shear strength properties of soil
22	Specimen extrusion tool, 60mm	1	0	1	ADB	2002	To measure the shear strength properties of soil

23	**3. Unconfined compression machine hand operated**		0	0	ADB	2002	**To determine the unconfined compressive strength of sample**
24	Autographic Unconfined compression Apparatus	1	1	0	ADB	2002	To determine the unconfined compressive strength of sample
25	38mm Sample Extruder	1	1	0	ADB	2002	To determine the unconfined compressive strength of sample
26	Split former	1	1	0	ADB	2002	To determine the unconfined compressive strength of sample
27	**4. Moistrure content**			0	ADB	2002	**To determine the Moistrure content of soil**
28	Sol drying oven 225litres capacity	1	1	0	ADB	2002	To determine the Moistrure content of soil
29	Dial thermometer 300 0 c	1	1	0	ADB	2002	To determine the Moistrure content of soil
30	Electronic top load balance 2100x0.01	1	1	0	ADB	2002	To determine the Moistrure content of soil
31	Electronic top pan balance 30000gx1g	1	1	0	ADB	2002	To determine the Moistrure content of soil
32	Unnumbered moisture content tin 90g	10	10	0	ADB	2002	To determine the Moistrure content of soil
33	Sample tray 306x306x38mm 4	10	10	0	ADB	2002	To determine the Moistrure content of soil
34	**5. Determination of liquid limit , ASTMD4318 AASHTO T89**			0	ADB	2002	**To determine the liquid limit**
35	Liquid limit device , hand operated	6	6	0	ADB	2002	To determine the liquid limit
36	Casagrande grooving tool, AASHTO	10	10	0	ADB	2002	To determine the liquid limit
37	Spatuala 100mm blade	10	10	0	ADB	2002	To determine the liquid limit
38	Unnumbered moisture content TIN.	20	20	0	ADB	2002	To determine the liquid limit
39	**6. Determination of particle density of soil, small pyknometer method BS 1377, ASTM D854, AASHTO T100.**			0	ADB	2002	**To determine the soil density**
40	50ML density bottle.	2	2	0	ADB	2002	To determine the soil density
41	Red rubber tubing H6.5mmbore 5.0mmwall.	2	2	0	ADB	2002	To determine the soil density
42	Volumetric flask 100ml.	1	1	0	ADB	2002	To determine the soil density
43	Non vacuum desiccator 200mm.	1	1	0	ADB	2002	To determine the soil density
44	Vacuum desccator 330mm.	1	1	0	ADB	2002	To determine the soil density
45	Safety cage for desicator.	1	1	0	ADB	2002	To determine the soil density

46	Wash bottle polythene 500l.	1	1	0	ADB	2002	To determine the soil density
47	B106 glass rods 7mm dia.200mm	1	1	0	ADB	2002	To determine the soil density
48	Silica gel, 6-16mesh quantity 500g	1	1	0	ADB	2002	To determine the soil density
49	Filter pump.	1	1	0	ADB	2002	To determine the soil density
50	14 litre water bath.	1	1	0	ADB	2002	To determine the soil density
51	**7. Moisture density relationship of soil and soil-cement mixture ASTM558, D698, D1557,AASHTO T4 ,T99,T180**			0	ADB	2002	**To determine the moisture density of soil**
52	PROCTOR MOULD 1/30ft3	4	4	0	ADB	2002	To determine the moisture density of soil
53	ASTM Compaction hammers 2.5kg.	1	1	0	ADB	2002	To determine the moisture density of soil
54	ASTM Compaction hammers 152mm.	4	4	0	ADB	2002	To determine the moisture density of soil
55	ASTM Compaction hammers 4.5kg.	1	1	0	ADB	2002	To determine the moisture density of soil
56	Spatula, 100mm blade.	1	1	0	ADB	2002	To determine the moisture density of soil
57	Straight Edge, 300mm.	1	1	0	ADB	2002	To determine the moisture density of soil
58	Sample tray 610x610x63mm.	1	1	0	ADB	2002	To determine the moisture density of soil
59	**8. CBR, Laboratory ASTM D 1883, AASHTO T193**			0	ADB	2002	**To Evaluate the potential strength of subgrade, subbase, and base course material**
60	28KN Clamped boad ring	1	1	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
61	M Compaction hammer 2.5kg	1	1	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
62	STM Compaction hammer 4.5kg	1	1	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
63	50KN CBR Test Machine	2	2	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
64	Penetrution Piston	1	1	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
65	Bracket and Adaptor	4	4	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material

66	ASTM Spacing disc	4	4	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
67	Filter Screen 150mm dia	8	8	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
68	4.5kg Annual surcharge ASTM,B32	4	4	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
69	5 LB (2.27kg) split surcharge weight	8	8	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
70	Swell plate	4	4	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
71	Swell tripod	1	1	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
72	Straight edge,300mm	1	1	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
73	Filter paper , equivalent to whatman No.5	1	1	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
74	**9. Electronic balance**			0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
75	Capacity 360x0.001g	2	2	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
76	**10. Electronic balance**			0	ADB	2002	**To Evaluate the potential strength of subgrade, subbase, and base course material**
77	Capacity 60000g x10.0gg	1	1	0	ADB	2002	To Evaluate the potential strength of subgrade, subbase, and base course material
78	**11. Determination of liquid limit cone penetrometer method BS 1377**			0	ADB	2002	**To determine the consistency of cement**

79	Cone penetrometer	2	2	0	ADB	2002	To determine the consistency of cement
80	Test gauge for checking condition of cone	2	2	0	ADB	2002	To determine the consistency of cement
81	Penetration test cup	2	2	0	ADB	2002	To determine the consistency of cement
82	Straight edge	2	2	0	ADB	2002	To determine the consistency of cement
83	Spatula 200mm blade	2	2	0	ADB	2002	To determine the consistency of cement
84	Timer clock	2	2	0	ADB	2002	To determine the consistency of cement
85	Sample container, 0.5 litre capacity	20	20	0	ADB	2002	To determine the consistency of cement
86	Evaporating dish 150mm dia x 45 depth	2	2	0	ADB	2002	To determine the consistency of cement
87	Wash bottle polythene 500ml	2	2	0	ADB	2002	To determine the consistency of cement
88	Glass plat 500mm square x 10mm thick.	2	2	0	ADB	2002	To determine the consistency of cement
89	**12. Laboratory sifter / shaker**	2	2	0	ADB	2002	**To shake the sieve(for sieve analysis)**
90	**13. Grain size analysis of soil ASTM D 422 AASTHO T88**			0	ADB	2002	**To classify the soils categories**
91	High speed strirre.	2	2	0	ADB	2002	To classify the soils categories
92	100ml glass cylinder with rubber	2	2	0	ADB	2002	To classify the soils categories
93	8 in. dia ASTM Sieves , stainless steel mesh:	2	2	0	ADB	2002	To classify the soils categories
94	4.75MM	2	2	0	ADB	2002	To classify the soils categories
95	2.0MM			0	ADB	2002	To classify the soils categories
96	850µM	2	2	0	ADB	2002	To classify the soils categories
97	425µM	2	2	0	ADB	2002	To classify the soils categories
98	250µM	2	2	0	ADB	2002	To classify the soils categories
99	106µM	4	4	0	ADB	2002	To classify the soils categories
100	75µM	4	4	0	ADB	2002	To classify the soils categories
101	Lid	2	2	0	ADB	2002	To classify the soils categories
102	Receiver	2	2	0	ADB	2002	To classify the soils categories
103	9.50mm	2	2	0	ADB	2002	To classify the soils categories
104	19mm	2	2	0	ADB	2002	To classify the soils categories
105	37.5mm	2	2	0	ADB	2002	To classify the soils categories
106	50.0mm	2	2	0	ADB	2002	To classify the soils categories
107	75.0mm	2	2	0	ADB	2002	To classify the soils categories
108	Sieve brush double-ended nylon	2	2	0	ADB	2002	To classify the soils categories
109	Measuring cylinder2000x20ml with	2	2	0	ADB	2002	To classify the soils

	spout						categories
110	Evaporation dishes 200mm dia. 55mm deepth.	4	4	0	ADB	2002	To classify the soils categories
111	ASTM / AASTO Soil hydrometer	2	2	0	ADB	2002	To classify the soils categories
112	Sodium hexametaphosphate 500g	2	2	0	ADB	2002	To classify the soils categories
113	Constant Temperature bath 0 to			0	ADB	2002	To classify the soils categories
114	99.90 C.	2	2	0	ADB	2002	To classify the soils categories
115	Glass Beaker 600ML squat form.	2	2	0	ADB	2002	To classify the soils categories
116	**14. Sand equivalent value BS1924 ASTYM D2419,AASHTO T176**			0	ADB	2002	**To classify the soils categories**
117	Sand equivalent apparatus (ASTMD2419)	2	2	0	ADB	2002	To classify the soils categories
118	5 litres syphon Assemble.	2	2	0	ADB	2002	To classify the soils categories
119	Sand equivalent shaker.	2	2	0	ADB	2002	To classify the soils categories
120	Calcium choride 2.5kg.	2	2	0	ADB	2002	To classify the soils categories
121	Format dehyde 40% solution 2.5litre.	2	2	0	ADB	2002	To classify the soils categories
122	Glycerol Analar 2.5 litres.	2	2	0	ADB	2002	To classify the soils categories
123	**15. Sand replacement ASTM D1556, AASHTO T191**			0	ADB	2002	**To find the field density of soil**
124	Sand cone inch (152MM).	2	2	0	ADB	2002	To find the field density of soil
125	Sand container, 5 litres.	2	2	0	ADB	2002	To find the field density of soil
126	Density plate	2	2	0	ADB	2002	To find the field density of soil
127	**16. Determination of slump:**			0	ADB	2002	**To determine the consistency of concrete**
128	Slump cone.	2	2	0	ADB	2002	To determine the consistency of concrete
129	Tamping rod 16mm x dia x 600mm long.	2	2	0	ADB	2002	To determine the consistency of concrete
130	Base plate 607 x 404 x 9mm.	2	2	0	ADB	2002	To determine the consistency of concrete
131	Slum cone funnel.	2	2	0	ADB	2002	To determine the consistency of concrete
132	**17. Making 150 and 100mm test cubes from fresh concrete.**			0	ADB	2002	**For concrete mould**
133	Compacting bar 25mm sq x380mm.	1	1	0	ADB	2002	For concrete mould
134	150 cube mould, clamp type,	6	6	0	ADB	2002	For concrete mould
135	Spanner for cube beam cylinder moulds.	2	2	0	ADB	2002	For concrete mould
136	100mm cube mould, clamp type.	6	6	0	ADB	2002	For concrete mould
137	**18. Making test beams from fresh concrete. (150x150x750mm and 100x100x500mm).**			0	ADB	2002	**For concrete mould**
138	Compacting bar 25mm sq x 380mm	1	1	0	ADB	2002	For concrete mould
139	150x150x750mm beam mould.	2	2	0	ADB	2002	For concrete mould

140	Spanner for cube beam cylinder moulds.	2	2	0	ADB	2002	For concrete mould
141	100mm cube mould, clamp type.	2	2	0	ADB	2002	For concrete mould
142	**19. Making test cylinders from fresh concrete: 150mm dia x 150 mm, 100mm dia x 200mm,150 dia x 300 m.m.**			0	ADB	2002	**For concrete mould**
143	150mm dia cylinder mould 15mm long.	2	2	0	ADB	2002	For concrete mould
144	100mm dia cylinder mould 200mm long.	2	2	0	ADB	2002	For concrete mould
145	150 dia cylinder mould 300mm long	2	2	0	ADB	2002	For concrete mould
146	**20. Density of hardened concrete.**			0	ADB	2002	**To find the weight of concrete sample**
147	Buyancy balance, 15kg x 0.5g. supplied with frame.	1	1	0	ADB	2002	To find the weight of concrete sample
148	Grable.	1	1	0	ADB	2002	To find the weight of concrete sample
149	**21. Sulphur capping 100 mm hardened cylinders.**			0	ADB	2002	**Use for load spread uniformly on top cap of concrete sample**
150	Cylinder capping frame.	2	2	0	ADB	2002	Use for load spread uniformly on top cap of concrete sample
151	Capping plate for 100mm specimens.	4	4	0	ADB	2002	Use for load spread uniformly on top cap of concrete sample
152	Capping plate for 150mm specimens.	4	4	0	ADB	2002	Use for load spread uniformly on top cap of concrete sample
153	Wax ladle.	4	4	0	ADB	2002	Use for load spread uniformly on top cap of concrete sample
154	Melting port for us with capping compound.	2	2	0	ADB	2002	Use for load spread uniformly on top cap of concrete sample
155	Flake capping compound.	2	2	0	ADB	2002	Use for load spread uniformly on top cap of concrete sample
156	Capping plate for 100mm specimens.	4	4	0	ADB	2002	Use for load spread uniformly on top cap of concrete sample
157	Capping plate for 100mm specimens.	4	4	0	ADB	2002	Use for load spread uniformly on top cap of concrete sample
158	**22. Compression Machine test for Standard Concrete cube and cylinder**			0	ADB	2002	**For testing Concrete cube and cylinder to determine the compressive strength of concrete**
159	ADR 1500KN : 380 X 600 X 1320 MM	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
160	Max. ram travel : 50mm.	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
161	Standard distance piece 50mm effective height.	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the

							compressive strength of concrete
162	Standard distance piece 80mm effective height.	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
163	Standard distance piece 100mm effective height.	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
164	Standard distance piece 20mm, 60mm.	2	0	2	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
165	Compression frame Jig Assembly, (for cement).	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
166	40mm square platen set, (for cement testing).	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
167	50mm square platen set, (for cement testing).	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
168	Flexural Jig assembly for 40x 40 x160mm prisms (for cement testing).	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
169	100KN flexural (beams) frame.	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
170	100kn flexural fitting kit.	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
171	Speciment bearer assembly.	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
172	Ball seating assembly	1	0	1	ADB	2002	For testing Concrete cube and cylinder to determine the compressive strength of concrete
173	**23. Specific gravity of hydraulic cement :**		0	0	ADB	2002	**To find the specific gravity of hydraulic cement**
174	Capacity : 250ml.	4	4	0	ADB	2002	To find the specific gravity of hydraulic cement

175	**24. Vicat Method:**			0	ADB	2002	**To determine the setting time of cement**
176	Vicat frame.	1	1	0	ADB	2002	To determine the setting time of cement
177	Initial set needle, 1.13mm dia.	1	1	0	ADB	2002	To determine the setting time of cement
178	Final set needle, 1.13mm dai.	1	1	0	ADB	2002	To determine the setting time of cement
179	ASTM initial set needle.	1	1	0	ADB	2002	To determine the setting time of cement
180	Vicat mould.	1	1	0	ADB	2002	To determine the setting time of cement
181	ASTM vicat mould.	1	1	0	ADB	2002	To determine the setting time of cement
182	**25. Plunger penetration apparatus :**			0	ADB	2002	**To determine the setting time of cement**
183	Cup, 80mm dia x 70mm deep.	1	1	0	ADB	2002	To determine the setting time of cement
184	Tamper, metal sheathed.	1	1	0	ADB	2002	To determine the setting time of cement
185	Moulding of mortar briquettes.	4	4	0	ADB	2002	To determine the setting time of cement
186	10kn flexural / tensile testing machine 220-240v, 50hz, 1ph.	1	1	0	ADB	2002	To determine the setting time of cement
187	Flexural jaws.	1	1	0	ADB	2002	To determine the setting time of cement
188	Tensile jaws.	1	1	0	ADB	2002	To determine the setting time of cement
190	**26. Moulding of prisms (40.1 x 40 x 160mm)**			0	ADB	2002	**For concrete mould**
191	Jolting table, for 220-240v, AC,50hz, 1ph.	1	1	0	ADB	2002	For concrete mould
192	Three-gamg muld, 40.1 x 40 x160mm.	3	3	0	ADB	2002	For concrete mould
193	Glss plase.	3	3	0	ADB	2002	For concrete mould
194	Feeding hopper.	3	3	0	ADB	2002	For concrete mould
195	Scraper.	3	3	0	ADB	2002	For concrete mould
196	**27. Modulus of elasticity:**			0	ADB	2002	**To determine the modulus of elasticity**
197	Compressometer	2	2	0	ADB	2002	To determine the modulus of elasticity
198	**28. Crack detection Microscope.**	0	0	0	ADB	2002	**To magnify the crack width**
199	Dimension 40x90x150mm	1	1	0	ADB	2002	To magnify the crack width
200	Magnification: x 35	0	0	0	ADB	2002	To magnify the crack width
201	Measuring range: 4mm	0	0	0	ADB	2002	To magnify the crack width
202	Division: 0.02mm	1	1	0	ADB	2002	To magnify the crack width
203	**29. Digital Crack measuring Gauge**	0	0	0	ADB	2002	**To measure the crack width**
204	Nominal gauge length: 100mm	0	0	0	ADB	2002	To measure the crack width
205	Measuring range: + 50mm	0	0	0	ADB	2002	To measure the crack width
206	Resolution: 0.01mm and 0.0005 inch	0	0	0	ADB	2002	To measure the crack width
207	Accuracy : 0.03mm and 0.001 inch	0	0	0	ADB	2002	To measure the crack

							width
208	Repeatability: 0.01mm and 0.0005 inch	0	0	0	ADB	2002	To measure the crack width
209	Thermal expansion: 11x10-b0C	0	0	0	ADB	2002	To measure the crack width
210	- Stainless Ateel location Dises.	1	1	0	ADB	2002	To measure the crack width
211	**30. Measuring cylinder, BS, soda glass, spouted**			0	ADB	2002	**To find the volume**
212	Graduate.			0	ADB	2002	To find the volume
213	- 100 ml	4	4	0	ADB	2002	To find the volume
214	- 250 ml	4	4	0	ADB	2002	To find the volume
215	- 500 ml	4	4	0	ADB	2002	To find the volume
216	- 1000 ml	4	4	0	ADB	2002	To find the volume
217	**31. Measuring cylinder, BS, Plastic with spout**			0	ADB	2002	**To find the volume**
218	Graduate.			0	ADB	2002	To find the volume
219	- 100 ml	4	4	0	ADB	2002	To find the volume
220	- 250 ml	4	4	0	ADB	2002	To find the volume
221	- 500 ml	4	4	0	ADB	2002	To find the volume
222	- 1000 ml	4	4	0	ADB	2002	To find the volume
223	**32. Micro Convermeter BS 1881-204**	0	0	0	ADB	2002	**To find the volume**
224	Dimension : 180 x 100 x 45 mm	2	2	0	ADB	2002	To find the volume
225	Locating Range : up to 360 mm maximum	0	0	0	ADB	2002	To find the volume
226	Accuracy : + 2 mm or +5% up to 75 % of the maximum range	0	0	0	ADB	2002	To find the volume
227	Display Type and scale LCD, Metric selectable	0	0	0	ADB	2002	To find the volume
228	Mini- Probe	2	2	0	ADB	2002	To find the volume
229	51 x 127 mm Depth x Height	0	0	0	ADB	2002	To find the volume
230	Range up to 125 mm	0	0	0	ADB	2002	To find the volume
231	Mini Probe	2	2	0	ADB	2002	To find the volume
232	127 x 70 x 38 mm Depth	0	0	0	ADB	2002	To find the volume
233	Range up to 360 mm		0	0	ADB	2002	To find the volume
234	**33. Dial Gauge**	0	0	0	ADB	2002	**To measure the displacement**
235	Type A, 57mm dia., 10mm travel, 0,01mm graduation	4	4	0	ADB	2002	To measure the displacement
236	Type B, 57mm dia., 10mm travel, 0,002mm graduation	4	4	0	ADB	2002	To measure the displacement
237	Type C, 57mm dia., 25mm travel, 0,01mm graduation	4	4	0	ADB	2002	To measure the displacement
III	**WELDING WORKSHOP**						
1	Arc Welding Machine	4	0	4		Unkown	To welding other steel
2	Drilling Machine	1	0	1		Unkown	To welding other steel
3	Grinder Motor	1	0	1		Unkown	To welding other steel
4	Metal Cutter	1	0	1		Unkown	To welding other steel
5	Cylinder O_2	1	0	1		Unkown	To welding other steel
6	Cylinder O_2C_2	1	0	1		Unkown	To welding other steel

Source:NTTI

添付資料 8　Preah Kossomak Polytechnic Institute（PPI）既存機材リスト

LIST OF EXISTING EQUIPMENT in PPI

No	Name of Equipment	Serial No	Quantity	Condition		Provided by	Provided in the year of	Purpose of Usage
				Usable	Not Usable			
I. Electricity								
1	Sqirrel Cage Astynchronous motor	DL 10115a	7 Sets	7	0	adb	2001	control
2	Sqirrel Cage motor	DL 10115A1	1Set	1	0	adb	2001	control
3	Star /Delta Swiching Starter	DL 10116a	3Sets	3	0	adb	2001	Starter
4	Three phase slip-ring induction motor	DL 10120a	5Sets	5	0	adb	2001	three phase380v
5	Starting and Synchronization Rheostart for synchronizable Asynchronous motor	DL 10125a	5Sets	5	0	adb	2001	Start synchronouns
6	Single-phase split phase motor	DL 10130a	6Sets	6	0	adb	2001	Single-phase220v
7	Capacitor Unit	DL 10135a	3Sets	3	0	adb	2001	starter
8	Universal Motor	DL 10150a	3Sets	3	0	adb	2001	Drill
9	Replusion Motor	DL 10170a	3Sets	3	0	adb	2001	Force
10	Starting and Synchronous Rheostart	DL 10190HD3a		2	0	adb	2001	Start Divide voltage
11	Three -phase synchronous Generator	DL 10190a	4Sets	4	0	adb	2001	Power Supply 380V
12	Starting Roheostat for DC motor	DL 10200RHDa	4Sets	4	0	adb	2001	Start Divide voltage
13	Shnut DC motor	DL 10200a	3Sets	3	0	adb	2001	DC motor
14	Exitation Rheostat	DL 10205a	4Sets	4	0	adb	2001	Start Divide voltage
15	Exitation Rheostat	DL 10206a	2Sets	2	0	adb	2001	Start Divide voltage
16	Series excitation	D110210a	2Sets	2	0	adb	2001	Conector
17	Compound Excited DC motor	DL 10220a	2Sets	2	0	adb	2001	Mix starter DC M
18	Compound Excited DC Generation	DL 10240a	1Set	1	0	adb	2001	Mix starter DC G
19	Separate Excitation braking Dc generation	DL 10260a	2Sets	2	0	adb	2001	Braking Dc generation
20	Electromagnetic brake	DL 10300Aa	2Sets	2	0	adb	2001	Braking
21	Brake Control Unit	DL 10300PAC	1Set	1	0	adb	2001	Braking
22	Power Supply for electromagnetic brake	DL 10305a	2Sets	2	0	adb	2001	Power Supply
23	Power brake	DL 10300P	1Set	1	0	adb	2001	Power brake
24	Paralleling Table	DL10310a	3Sets	3	0	adb	2001	Paralleling Table
25	Universal Base	DL 10400	7Sets	7	0	adb	2001	Universal Base
26	Output Turret (For Electric Measurement and Machine)	DL 10016EG	3Sets	3	0	adb	2001	Show Voltage
27	Module for Measurement the mechanical power	DL 10050a	2Sets	2	0	adb	2001	Measure the mechanical
28	Module for Measurement the Electrical power	DL 10060a	1Set	1	0	adb	2001	Measure the Electrical
29	Module for Measurement the Electrical power	DL 10065	1Set	1	0	adb	2001	Measure the Electrical
30	Output Turret (For Electric Measurement and Machine)	DL 1013M2	3Sets	3	0	adb	2001	Show Voltage
31	Three phase Transformer	DL 1080	2Sets	2	0	adb	2001	Power Supply 380V
32	Singe phase transformer	DL 1093	1Set	1	0	adb	2001	Power Supply 220V
II. Electronic								
1	PLC OMRON		3Sets	3	0	JICA	2008	PLC trainer
2	PIC Programer		3Sets	2	1	JICA	2008	PIC writer
3	PICKIT2 Programer	PX-700	5Sets	3	2	JICA	2008	PIC writer
4	Microcontroller Test-Lab	PIC16F877	3Sets	3	0	JICA	2008	PIC test
5	MCS Skirt-51		1Set	1	0	JICA	2008	PIC test
6	Sensor Test bot kit		5Sets	5	0	JICA	2008	measure compo.
7	MCS 51 Mocro Robot Kit		4Sets	4	0	JICA	2008	PIC test
8	ET- Robot 877		2Sets	2	0	JICA	2008	PIC test
9	ROBOVIE-I		1Set	1	0	JICA	2008	PIC test
10	Digital Curcuit Experment Board	NX-100 plus	3Sets	3	0	JICA	2008	logic test
11	Digital Curcuit Experment Board	NX-4i	3Sets	3	0	JICA	2008	logic test
12	OSC		24Sets	16	8	ADB	1996	measurement
13	Funtion Generation	TG 12020MHz	9Sets	6	0	ADB	1996	generator

14	Mili Ohm meter	BS 401	5Sets	5	0	ADB	1996	measurement
15	Funtion Generation	GX245	1Set	1	0	ADB	1996	generator
16	Intellegint Multimeter	4503	2Sets	2	0	ADB	1996	measurement
17	Universal Counter-Timer	Appollo100	2Sets	2	0	ADB	1996	counter
18	Logic Analyser	3332	2Sets	2	0	ADB	1996	logic test
19	Low Distorition Sine / Sqare OSC	LDO 100	1Set	1	0	ADB	1996	generator
20	PAL TV+VIDEOPattern Generator	ORION	2Sets	2	0	ADB	1996	training kit
21	Function Generator	Thenda TG 503	2Sets	2	0	ADB	1996	generator
22	DC Power Supply(ISO-Tech)	IPS 1603D	2Sets	2	0	ADB	1996	power supply
23	Metrix	HX 751	3Sets	3	0	ADB	1996	generator
24	DC Power Supply	IPS 303A	8Sets	8	0	ADB	1996	power supply
25	Fault SIMULATOR		4Sets	4	0	ADB	1996	simulation
26	DC Power Supply	PSU/EV	6Sets	6	0	ADB	1996	power supply
III.Civil Construction								
1	Concrete Compression Machine	Modal :C007OS	1 Set	1	0	ADB	2001	Test strength of concrete
2	Steel tension machine	Ref :TCR001.1	1 Set	1	0	ADB	2001	Test strength of steel bar
3	Soil Compaction machine	Ser :1099-26-113 9	1 Set	1	0	ADB	2001	Test for soil compaction(CBR)
4	Concrete cutting Machine	Ref :C0350	1 Set		1	ADB	2001	Cut concrete sample
5	Electrical Balance and density Balance	Ser :199,QC:34E DE-P	1 Set	1	0	ADB	2001	Weigh material for testing
6	Concrete mixing machine	Ref :TCR001.1	1 Set	1	0	ADB	2001	Mix concrete for testing
7	Moisture condition	Ref : 1080/R01	1 Set	1	0	ADB	2001	Test moiture level of material
8	Tri-axial test	Ref : 1555-6-1393	1 Set		0	ADB	2001	Test for soil strength
9	Consolidation test Equipment		1 Set	1	0	ADB	2001	Test for settlement of soil
10	CBR Test machine	Ref :1802-2-1137	1 Set	1	0	ADB	2001	Test for CBR (Strength of soil)
11	Shear Test machine	Ref :1627-8-1420	1 Set		1	ADB	2001	Test for shear strength of soil
12	Mortar mixing machine	Ref :L0031-5	1 Set	1	0	ADB	2001	For mix mortar
13	Limit Alterberg test equipment	Ser :1356-12-536	1 Set	1	0	ADB	2001	Test for limite and plastique
14	Sieve test		1 Set		1	ADB	2001	Test for particular size
15	Penetrometer Equipment		1 Set		1	ADB	2001	Test for bituminous
16	Static Cone Penetrometer		1 Set	1	0	ADB	2001	Test for soil strength in field
17	DESC-AUGER Tools	Ref :231717/20	1 Set	1	0	ADB	2001	Find sample of soil in field
18	Speedy moisture Tester	Ser :27572	1 Set	1	0	ADB	2001	For drying soil condition
19	Equipment of hydraulic	Ref :C0215/G.2	1 Set	1	0	ADB	2001	For hydraulic testing
20	Hydraulic band and accessories		1 Set	1	0	ADB	2001	Test for flow velocity of water
21	Hydrogen BUBBLE	Ref :F14-A	1 Set	1	0	ADB	2001	Test for water current
22	Hydro static Band 9092 and accessories		1 Set		1	ADB	2001	Test for viscocity and pressure
23	Osborne Reynolds and apparatus	Ref :F1-2	1 Set	1	0	ADB	2001	Test for Reynold number
24	Air Flow Stady		1 Set	1	0	ADB	2001	Test for air pressure

Source: PPI

添付資料 9　Industrial Training Institute（ITI）既存機材リスト

List of Existing Equipment in ITI

No.	Equipment Name	Quantity	Conditions		Provided by	Provided in the year of	Purpose of Usage
			Usable	Not usable			
I	METAL ENGINEERING						
1	Shapening Machine (big)	1	1		Japan	1959	Use shaping gear, steel and cilander
2	Shapening Machine	1	1		France	1960	Use shaping gear, steel and cilander
3	Shapening Machine	1		1	France	1960	Use shaping gear, steel and cilander
4	Mab (Big)	1	1			1960	Use for training aids
5	Mab (Small)	2	2			1960	Use for training aids
6	Sawing Machine	1	1		China	1984	Use for cutting steel
7	Shapening Motor	1	1		China	1984	Use shaping plate
8	Lath	1	1		China	1986	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
9	Drilling Machine	1	1		Japan	1986	Use for drilling holds for gernal purposes
10	Desk	1		1	Cambodia	1986	Use for office work
11	Desk	1		1	Cambodia	1986	Use for office work
12	Wooden Desk	1		1	Cambodia	1986	Use for office work
13	Cabinet	1		1	Cambodia	1986	Use for keeping documents
14	Drilling Machine (ITASHI)	1	1		Japan	1987	Use for drilling holds for gernal purposes
15	Metal	1	1		China	1988	Use for training aids
16	Lath	1	1		Hong Kong	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
17	Lath	1	1		Hong Kong	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
20	Shapening Machine	1	1		China	1988	Use shaping gear, steel and cilander
21	Drilling Machine	1	1		China	1988	Use for drilling holds for gernal purposes
22	Shapening Machine	1	1		China	1988	Use shaping gear, steel and cilander
23	Drilling Machine	1	1		China	1988	Use for drilling holds for gernal purposes
24	Shapening Machine	1	1		China	1988	Use shaping gear, steel and cilander
25	Lath	1	1		China	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
26	Lath	1	1		China	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
27	Shapening Machine (Cilander)	1	1		China	1988	Use shaping gear, steel and cilander
28	Lath	1	1		China	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
29	Lath	1	1		China	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts

30	Lath	1	1		China	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
31	Lath	1	1		China	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
32	Lath	1	1		China	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
33	Lath	1	1		China	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
34	Lath	1	1		England	1988	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
35	Vice	10	10			1988	Use for cluping balts
36	Vice	16	16			1988	Use for cluping balts
37	Motor Pump	1	1		Japan	1988	Use for Pumping water
38	Fan	22	22		Thai	1988	Use for office work
39	Fan	5	5		Thai	1988	Use for office work
40	Cabinet	1	1		Thai	1988	Use for for keeping document
41	LCD Projector	1		1	Japan	1988	Use for cutting steel
42	Desk	1	1		ADB	1998	Use for office work
43	Table 0.6x1.3	1	1		ADB	1998	Use for office work
44	Air Compresor	1	1		ADB	2000	Use for cutting steel
45	Lath	1	1		ADB/ E / CL	2000	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
47	Sewing Machine	1	1		ADB/ E / PH	2000	Use for cutting steel
48	Shapening Machine	1	1		ADB/ E / SaM	2000	Use shaping gear, steel and cilander
50	CNC	1	1		ADB/ E / CNC	2000	Use for cutting steel
52	Hydrolic Presure	1	1		ADB/ E / HP	2000	Use for cutting steel
53	Printer Konica Minolta	1	1		PAP - 04 - P14	2005	Use for training aids
II	AUTO ENGINEERING						
1	Wooden Desk	1	1		ADB		Use for office work
2	White Board	1	1		ADB		Use for thraining aids
3	Fan	2	2			1989	Use for office work
4	Auto Voltage	1		1	Au 8	1992	Use for cutting steel
5	Computer	2	2		C17-18	1997	Use for thraining aids
6	Printer	1		1	ADB-P10	1997	Use for thraining aids
7	Computer	3		3	Oxfam-C19-21	1997	Use for thraining aids
8	Cabinet	1	1		ADB	1998	Use for thraining aids
9	TV 32 Inch	1	1		ADB	1998	Use for thraining aids
10	Video Tape	1	1		ADB	1998	Use for thraining aids
11	Auto Voltage 3000W	1		1	ADB-Au7	1998	Use for thraining aids
12	Auto Voltage 2000W	2		2	ADB-Au 9-10	1998	Use for thraining aids
13	Computer	1		1	ADB-C3	1998	Use for thraining aids
14	Computer	1		1	ADB-C4	1998	Use for thraining aids
15	Printer	1		1	ADB-P8	1998	Use for thraining aids
16	UPS 600N	2	2		ADB-U7-8	1998	Use for thraining aids
17	UPS 500	1		1	U 9	1998	Use for thraining aids
18	UPS 600 CI	1		1	ADB-U10	1998	Use for thraining aids
19	UPS 600	4		4	ADB-U11-14	1998	Use for thraining aids
20	Printer	1		1	Oxfam	1998	Use for thraining aids

21	Printer	1		1	-	1998	Use for thraining aids
22	Computer	1		1	ADB-C6	1998	Use for thraining aids
23	Computer	5		5	G>y>k -C7-11	2002	Use for thraining aids
24	Computer	5		5	UNESCO-C12-16	2002	Use for thraining aids
25	HP Printer	1	1		ADB-P9	2002	Use for thraining aids
26	Computer	10	10		GM>É>s exg S1-10	2003	Use for thraining aids
27	Monitor 17”	1	1		PAP - 03	2004	Use for thraining aids
28	CDRoom Drive	1	1		PAP - 03	2004	Use for thraining aids
29	Computer Second Hand	1		1	PAP-05-C1	2005	Use for thraining aids
30	Computer Second Hand	2	2		PAP-06	2006	Use for thraining aids
31	Computer Second Hand	5	5		BP-07-C22-C26	2007	Use for thraining aids
32	Computer Second Hand	5	5		BP-08-C27-C31	2008	Use for thraining aids
33	Brand Dell Computer Inspiron	28	28		C32-C59	2009	Use for thraining aids
III	CIVIL CONSTRUCTION						
1	Sawing Machine (Cycle Hold)	1	1		Cambodia	1960	Use for cutting steel and making holds
2	Sawing Machine (Cycle Hold)	1	1		Cambodia	1960	Use for cutting steel and making holds
3	Sewing Machine (Angle)	1	1		Cambodia	1960	Use for cutting steel and making Angle
4	Steel Stand	1	1		Cambodia	1960	Use for holding steel as under need
5	Pipe Bending	1	1		Cambodia	1960	Use for bending pipes and tubes
6	Sawing Machine (Steel)	1	1		Cambodia	1960	Use for cutting steel
7	Steel Stand	1	1		Cambodia	1960	Use for holding steel as under need
8	Steel Bending Machine	1	1		Cambodia	1960	Use for bending bending steel with different types
9	Steel Bending Machine	1	1		Cambodia	1960	Use for bending bending steel with different types
10	Steel Bending Machine	1	1		Cambodia	1960	Use for bending bending steel with different types
11	Sawing Machine	1	1		Cambodia	1960	Use for cutting steel
12	Sawing Machine	1	1		Cambodia	1960	Use for cutting steel
13	Sawing Machine	1	1		Cambodia	1960	Use for cutting steel
14	Pipe Bending	1	1		Cambodia	1960	Use for bending pipes and tubes
15	Metal Electricity Machine	1	1		Cambodia	1977	Use for cutting steel
16	Metal Electricity Machine (DC)	1	1		Cambodia	1980	Use for training aids
17	Steel Bending Tool	1	1		Cambodia	1980	Use for bending bending steel with different types
18	Compresure Machine	1	1		Cambodia	1982	Use for training aids
19	Steel Bending Machine	1	1		Cambodia	1987	Use for bending bending steel with different types
20	Steel Bending Machine	1	1		Cambodia	1987	Use for bending bending steel with different types
21	Steel Bending Machine	1	1		Cambodia	1987	Use for bending bending steel with different types
22	Drilling Machine	1	1		Cambodia	1987	Use for drilling hold for any kinds as required.
23	Steel Bending Machine (4mm)	1	1		Cambodia	1987	Use for bending bending steel with different types
24	Shaping Machine	1	1		Cambodia	1988	Use shaping gear, steel and cilander

25	Metal Electricity Machine (40 K)	1	1		Cambodia	1988	Use for training aids
26	Metal Electricity Machine (200A)	1	1		Cambodia	1988	Use for training aids
27	Sawing Machine J14	1	1		Cambodia	1988	Use for cutting steel
28	Sawing Machine	1	1		Cambodia	1988	Use for cutting steel
29	Press 30 Tone YK 30	1	1		Cambodia	1988	Use for training aids
30	Drilling Machine 18 mm	1	1		Cambodia	1988	Use for drilling hold for any kinds as required.
31	Drilling Machine 12 mm	1	1		Cambodia	1988	Use for drilling hold for any kinds as required.
32	Shaping Machine	1	1		Cambodia	1988	Use shaping gear, steel and cilander
33	Vice	8	8		Cambodia	1988	Use for training aids
34	Vice	1	1		Cambodia	1988	Use for training aids
35	Metal Electricity Machine (200A BX 1200)	1	1		Cambodia	1988	Use for training aids
36	Sawing Machine	1	1		Cambodia	1988	Use for cutting steel
37	Metal Electricity Machine	1	1		Cambodia	1995	Use for training aids
38	Sawing Machine with Stone Plate	1	1		Cambodia	1995	Use for cutting steel and stone
39	Wooden Desk	1	1		Cambodia	1996	Use for Office work
40	Cabinet	1	1		Cambodia	1996	Use for keeping documents
41	Wooden Desk	1		1	Cambodia	1996	Use for Office work
42	Cabinet	1	1		Cambodia	1996	Use for keeping documents
43	Cabinet	1	1		Cambodia	1996	Use for keeping documents
44	Table	1	1		ADB	1998	Use for Office work
45	Cabinet	1	1		ADB	1998	Use for keeping documents
46	Chair	1	1		ADB	1998	Use for Office work
47	Auto Volta 2000W	1	1		ADB Au 11	1998	Use for training aids
48	Steel Bending Machine (4mm)	1	1		ADB/ E / FB	2000	Use for bending bending steel with different types
49	Air Compresure	1	1		ADB/ E / Aco	2000	Use for cleaning and filling air
50	Metal Electricity Machine	1	1		ADB/ E / Ge	2000	Use for training aids
51	Sawing Machine Plasma	1	1		ADB/ E / PC	2000	Use for cutting steel
52	Steel Bending Machine	1	1		ADB/ E / PR	2000	Use for bending bending steel with different types
53	Metal Electricity Machine	1	1		ADB/ E / SW	2000	Use for training aids
54	Metal Electricity Machine TIG	1	1		ADB/ E / TIG	2000	Use for training aids
55	Metal Electricity Machine	2	2		ADB/ E / WTr	2000	Use for training aids
56	Sawing Machine	1	1		ADB/ E / HG	2000	Use for cutting steel
57	Computer WELD-RAINER TM	1	1		ADB/ E / WTT	2001	Use for checking vihecal with scaner
58	Drying Box	1	1		ADB/ E / DrE	2001	Use for drying materials
59	Machine DW/818GB-203v-50HZ	1	1		PAP - 04 - P-15	2005	Use for training aids
60	Printer Konica Minolta	1	1		PAP 06	2006	Use for printing documents
61	Inverter Amii Machine	1		1	PAP 06	2006	Use for training aids
62	Biogas Meter	1	1		BP - 08-SC-4	2008	Use for training aids
63	Scanner	1	1		BP - 09	2009	Use for scaning vihecals

Source:ITI

添付資料 10　カンボジア工科大学（ITC）整備要請機材リスト

List of New Equipment Requested from ITC

No	Name of Equipment	Specification	Quantity	Unit Price of Equipment	Amount
I. DEPARTMENT OF FOOD TECHNOLOGY AND CHEMICAL ENGINEERING					
1	**Gas Chromatogaphy - Mass Spectrometry (GC-MS)**	- GC System with Split/ Split less inlet - Electron Imact Ionization (EI) & chemical Ionization (CI) - Mass range of 1000 u - Scan rate up to 12 500 U/s - Monolithic Hyperbolilc quadrupole mass filer - Tri-Axis HED-EM detector - Turbo molecular pump with maximum flow of 260 L/s - Manual and auto tune facility - Software package that combine data acquisition, instrument control, tuning, data analysis and creation of mass spectral libraries - Spectral libraries - Hight sensitive EI, PCI and NCI	1	120000	120000
2	Fluorescent detector for HPLC	Fluorescent detector for HPLC	1	28600	28600
3	**Water Actvity Meter**	- Fast: water activity meter gets readings in 5 minutes or less - Accurate: ±0.003 aw - Verifiable with independent salt standards - Repeatable: different users, different locations, same result - Easy to use: water activity meter yields precise measurements with minimal training - Secure: offers administrative control over calibration and sample data - Proven: used by 80 of the top 100 food companies	1	15000	15000
4	**Laboratory Scale spray dryer (Pulverisator)**	- Chambre d'atomisation cylindro-conique calorifugée avec trou d'homme pour l'accès aux buses et le nettoyage - Buse bifluide d'injection d'air et de liquide, - Récipient d'alimentation liquide sous pression de capacité 9L, - Cyclone, - Batterie de résistances de puissance 21kW, - Ventilateur, - 3 sondes Pt100 et 2 sondes de mesure d'humidité pour le suivi du procédé, - Coffret électrique avec affichages des mesures, régulation et protection des résistances et du ventilateur	1	150000	150000
5	**Viscosimeter**	- 10 different options of language - L.C.D. display of parameters and results - Temperature range:- from 0.0 °C to + 100.0 °C - Resolution °C: 0.1 °C (0.1722 °F). - Precision °C: ± 0.1 °C - Direct results in cP(mPa-s) or cSt.: models STS-2011 L & R - Precision: ±1% base scale - Mesurement range: 100 to 13.000.000 cP - Standard delivery with a set of spindle for different use purpose - Standard spindle R2, R2, R3, R4, R5, R6, R7 - Power consumption 15W - Weight 5 kg	1	11370	11370
6	**Bioreactor**	The compact , Autoclavable Fermentor/ bioreactor - Ready-to-use packages for microbial or cell culture applications - Notebook PC for operation included - Control of temperature, pH, DO, stirrer speed, gas mixing, Foam| Level and substrate - 2-stage DO controller configurable via stirrer speed, gas mixing or substrate - In-line pH calibration - Trend display - Flexible 4-gas mixing system with individual gas flow path for cell culture packages - Oxygen enrichment capability for microbial packages - Interchangeable borosilicate glass culture vessels with 1 L, 2 L or 5 L working volume - Industry proven hardware	1	25000	25000
7	**Microwave Digestion**	Microwave Hardware - Single magnetron system with rotating diffuser for homogeneous - Magnetron protected from reflected microwave power - Installed power: 1200 Watts - Delivered microwave power: 1200 Watts, controlled via microprocessor in 1 Watt increments - Stainless steel door with shatter-proof glass window - Large microwave cavity 37 x 34,5 x 33,5 (h) cm - Microwave cavity: All 18/8 stainless steel housing with multilayer PTFE plasma coating applies at over 350oC - Cavity illumination - Total of 4 micro-switches safety interlocks to prevent microwave emission with open door - 1 RS 232 port for pc connection - Weight: ca. 75 kg Advanced Controls - ATC-400-CE Automatic temperature monitoring and control up to 300°C in a reference vessel (sensor to be ordered separately) Control Terminal 260 - Monochrome touch-screen, industrial grade controller, 5"	1	81975	81975

		screen, - Resolution 240x128 dots for sharp process graphic - Methods and process reporting data saved on internal memory Software "Easy-Control" Software for full GLP documentation with PID Algorithms to exactly duplicate the required temperature curve, and for full Quality Assurance.			
8	**Multiparameter Water Quality Control**	- Can measure potential value, pH value (or pX value), concentration of ion, conductivity, total solid solution (TDS) , salinity, dissolved oxygen , saturation and temperature simultaneously - Measuring Range a) mV: (-1999.99～0)mV, (0～1999.99)mV b) pH/pX: (-2.000～19.999)pH/pX c) Concentration: various concentration value in correspondence to potential measuring range and indicating electrode d) Conductivity: 0.000μS/cm～199.9mS/cm e)Resistivity: 5.00Ω.cm～20MΩ.cm f) TDS: 0.000 mg/L～19.99g/L g)Sanility: (0.0～8.00)% h)Dissolved oxygen concentration: (0.00～19.99)mg/L i)Dissolved oxygen saturation: (0.0～199.9)% j)Temperature: (-5.0～135.0)℃	1	1427	1427
9	**Ion Chromatography**	- Ion Chromatography system with Degas bundles package included: Isocratic series pump, injection valve and heated conductivity cell - Air regulator - Column and accessories for anion ASRS-300 Anion suppressor, 4 mm IonPac AS22 4 mm Analytical column IonPac AG22, 4 mm Guard column Comine Seven Anion Standard-II, 50 ml - Control software and conputer	1	100000	100000
10	**Ultraviolet and Visible Range spectrophotometers**	- Wavelength range 190-1100 nm - Wavelength range 190-1100 nm - Optical system Single beam, diffraction grating 1200 lines/nm - Wavelength accuracy ±0,5 nm - Wavelength repeatability 0,3 nm - Photometric accuracy ±0,3% T - Photometric repeatability ±0,2% T - Stability ± 0,002 A/h @ 500 nm - LCD Display Graphic Graphic(320x240) - Light source Halogen and deuterium lamps (pre-aligned) - Output USB, parallel port (printer) - Power requirements 220 V / 50Hz AC or 110 V / 60 Hz AC	1	10000	10000
11	**Rotary Evaporator**	- Condenser G1 Diagonal - Bath Capacity 11/8 gal. (4.3L) - Temperature Range 20° to 100°C - RPM 20 to 270 rpm - Applications Standard distillations - Display Digital temperature display - Volts 115 Hertz 50/60	1	12000	12000
12	**Freezer -80oC**	: Storage of General (non-flammable) Laboratory Materials : 815 liters / 28.8 cu. ft., 600 Standard 2" Boxes : **-50°C to -85°C** @ 32 °C(90°F) Ambient : 230V, 50 Hz, 1 Phase : 9.5 FLA : 20.0A dedicated grounded circuit. Protected by circuit breaker rated for inductive loads : NEMA 5-20P or IEC Cord, 10 Feet or 3.0 Meters	1	20000	20000
13	**System Water Purification**	- A series of filtration system with filter 1 um, 5um, 10 um and 25 um - A pump for water system circulation - UV system - System electric to control all fonctionning of the system - System for bottle filling (bottle 0.5 L)	1	8000	8000
14	**Biogas Analyzer**	Measurement range: CO2（NDIR): 0-50% CH4（NDIR):0-100% H2S（ECD):0-1000PPM to 0-10000PPM O2(ECD): 0-25% Resolution:0.01% for CO2, CH4, O2 and 1ppm for H2S Repeatability: ±0.5% FS Linearity: ±1% FS Zero/Span drift: ±2%FS Response time(T0-90):<15s OUTPUT: RS232 Dimension: 360×120×170mm (Length x Width x Height) Weight: 5Kg	1	25000	25000
15	**Smasher for Sample preparation in microbiology**	- Smsher time around 15 second - Eaasy to use - Sound proof - Power 220v/ 50 Hz	1	10000	10000

16	**Filter press (laboratory scale)**	Filter press (laboratory scale)	1	25000	25000
17	**Press hydrolic Sakaya (Thailand)**	Press hydrolic Sakaya (Thailand)	1	20000	20000
18	**Broyer Mejisa Mecturry (Espagne)**	Broyer Mejisa Mecturry (Espagne)	1	20000	20000
19	**Filling machine (Fruit juice, laboratoiry scale)**	Filling machine (Fruit juice, laboratoiry scale)	1	20000	20000
20	**Moisture Analyzer**	- Temperature range 30-230°C / 1°C - Integrated balance (124 g / 0.1 mg, 124 g / 1 mg, 310 g / 1 mg, 52 / 1 mg) - nterface RS232, PC and Printer - VFD Display and 10 key Keyboard - Backlit graphic LCD with touch screen - Anti-theft code - Supplied with 30 aluminum dishes	2	4000	4000
21	**Precision Balance**	- Capacity 3200 g - Readability: 0.1 g - Repeatability: 0.05 g - Lenearity: 0.1 g - Pan Size: 200x200 mm	2	1500	3000
22	**Digital Hand HelPocket Refractometer**	- Calibration with water only - Extremely water resistant - Light and Conpact - Automatic Temperature compensation - Measurement in 3 second - Measurement range: Brix 0-93%	2	1500	3000
23	**Digital Pocket Ethyl Alcohol Refractometer**	- Product Type: Refractometer - Class: Digital Hand-Held, Pocket Refractometer - Range: 0.0 - 45.0% Ethanol - Resolution: 0.5% - Accuracy: ±1.0% - Overall Dimensions: 5.5 x 3.1 x 10.9cm	2	1000	2000
24	**Oven, Model UNB 400 (Memmert, Germany)**	Interior volume: 53 liters Natural air circulation Temperature range from +30°C (however at least 5°C above ambient) up to +220 °C Digital LED displa of set and actual temperature as well as remaining process time Intergrated digital time (1 minute up to 99h59 minutes) to switch of heating to stand by mode Stainless steel interior (WxHxD): 400 x 400x300 mm Stanless steel exterior (WxHxD) 500x680x480 mm Electrical supply 230 v (+/- 10%) 50/60 Hz Including 02 Stainless Steel shelves	1	1947	1947
25	Micro pipette 0-10 ul	Micro pipette 0-10 ul	2	400	800
26	Micro pipette 2-20 ul	Micro pipette 2-20 ul	2	400	800
27	Micro pipette 20-200 ul	Micro pipette 20-200 ul	2	400	800
28	Micro pipette 100-1000 ul	Micro pipette 100-1000 ul	2	400	800
29	Micro pipette 500-5000 ul	Micro pipette 500-5000 ul	2	400	800
TOTAL					**$721,319**

II. DEPARTMENT OF COMPUTER SCIENCE

1	CISCO1841	Modular Router w/2xFE, 2 WAN slots, 64 FL/256 DR	15	837	12555
2	HWIC-2A/S or HWIC-2T	2-Port Async/Sync Serial WAN Interface Card	15	266	3990
3	CAB-SS-V35MT	V.35 Cable, DTE Male to Smart Serial, 10 Feet	15	38	570
4	CAB-SS-V35FC	V.35 Cable, DCE Female to Smart Serial, 10 Feet	15	38	570
5	WS-C2960-24TT-L	Catalyst 2960 24 10/100 + 2 1000BT LAN Base Image	15	492	7380
6	CON-SNT-CISCO1841	SMARTnet 8x5xNBD for 1841 Modular Router w/2xF	15	217	3255
7	CON-SNT-C29602TT	SMARTNET 8X5XNBD Catalyst 2960 24 10/100 + 2 1000BT LAN	15	61	915
8	Linksys WRT150N or equivalent	Wireless N-Home Router	15	80	1200
9	ACS-1841-RM-19	Rackmount Kit for the 1841	15	38	570
10	Latitude E5520 Laptop	Laptop for setup and testing	15	1200	18000
11	Dell PowerEdge T710	Storage server and Domain controller	2	1500	3000
12	Dell Precision T3500 Tower	Workstation for Application development practical work	30	1000	30000
13	Google developer Phone Nexus 1	Smartphone for Android application testing	30	700	21000
14	UPS	UPS	8	500	4000
1	iMac	Workstation for Application development practical work	30	1400	42000
2	Apple Ipod Touch	iOS application development and testing	30	250	7500
3	Apple iPad 2	iOS Tablet application development and testing	30	800	24000
4	UPS	UPS	8	500	4000
1	Dell Precision T3500 Tower	Workstation for Application development practical work	30	1000	30000
2	UPS	UPS	8	500	4000
3	Dell PowerEdge T710	Storage server and Cours management server	1	1500	1500
TOTAL					**$220,005**

III. DEPARTMENT OF FOUNDATION YEAR

1	Resonance of circuit R,L,C	Monitor Unit : - Oscilloscope analogique/numérique 2 x 60 MhzType : OX 8050 Power Supply Unit : - Function Generator (GBF) 10 mHz to 5 MHz Socket Unit: - Board of variable resistors - Board of Capacitor (1 X 1µF, 2 X 2.2 µF, 2 X 4.7) - Variable Inductance 1.1 H : VARIASELF 2 Multi meters Connector Unit: - Cable BNC / Banana male security without recovery back (need 3 units)	5	24000	120000
2	Charge and discharge capacitor	Monitor Unit : - Oscilloscope analogique/numérique 2 x 60	5	21500	107500

		MhzType : OX 8050 Power Supply Unit : - Function Generator (GBF) 10 mHz to 5 MHz Socket Unit: - Board of variable resistors - Board of Capacitor (1 X 1µF, 2 X 2.2 µF, 2 X 4.7) Connector Unit: - Cable BNC / Banana male security without recovery back (need 3 units)			
3	Measurement of unknown Resistancs	Power Supply Unit: - Variable power supply 0 to 30 V and 0 to 3A DC - ALR 3003 Meter Unit: - Digital multi meters (200 ohm-2M.ohm) Socket unit: - Board of resistors - Board of Wheatstone bridge	5	22100	110500
4	Mécastatique	Items in the box: - Solid aluminum, - plumb, - paper stickers, - string and hooks, - bar holes equidistant axes of magnet, - two force gauge N 1, a 2 N force gauge, - two springs, - tracing paper, - a square magnetic, - magnetic four pins, - a solid of negligible mass, - an inclined plane full box masses hook, - magnetic index, - a record of moments, - a magnetic center zero, - three magnetic pulleys, pulley moving yoke	5	6000	30000
5	Ballistic Pendulum Shock Pendulum	Items in a set: - A nylon pendulum - Base and the pendulum with leveling screws - The scale marked in degrees - weighted needle - An adjustable, self locking, spring loaded gun - Manual of completed instructions Feature: - To study The laws of Conservation of Momentum experiment - To study Ballistic trajectory path experiment.	5	500	2500
6	Hooke's Hook's Law	Items in a set: - A heavy base with an adjustable mirror millimeter scale - A spiral spring with indicator and weight hanger - Four 50 g slotted weights - Manual of completed instructions Springs Set of 5: - A set of 5 Springs with different Spring Constants - Springs stretch 2 cm with a load of 0.5N, 1N, 2N, 3N and 5N Feature: - To demonstrate Hooke's Law experiment - To study simple harmonic motion of vibrating weight suspended from spring - To study potential energy.	5	500	2500
7	Inclined Incline Plane Deluxe	Items in a set: - Hardwood, nicely polished Inclined Plane 600 x 95 mm, about 20 mm thick. - A metal Arc, - A pulley, - 2 hardwood Blocks with hooks, one 200 x 70 mm, other 100 x 70 mm, - 1 heavy Steel Block 100 x 75 mm with hook, - 1 Heavy Metal Roller - 1 Scale Pan. Friction Block and Surface Set: - Three wooden blocks about, L x W, 100 mm x 70 mm, with hooks. One with a highly polished side, second with a sandpaper side and third with an aluminum side. - Complete with a polished wooden base about, L x W, 355mm x 70 mm. - With instructions.	5	800	4000
8	Deluxe Air Track Complete Set, Track,	Items in a set: - Aluminum alloy air track (1.5 meters x 150 mm) Catalog # 635-5 - Digital timer: Digital 3 digit display in units of 0.1 ms, 1 ms, 10 ms: Catalog # 635-3 - Air source: Catalog # 635-8 Feature: - DELUXE AIR TRACK COMPLETE SET: Aluminum alloy air track body construction makes this apparatus light weight and mechanically strong. Air Track Length 1.5 meters (4.9 ft.), Side 150 mm (6 inches) . Side blocks are removable for easy cleaning. Good frictionless surface.	5	2500	12500

	Air Source & Timer	- DIGITAL TIMER WITH PHOTOGATES: Digital 3 digit display in units of 0.1 ms, 1 ms, 10 ms. Used to measure time intervals, period of oscillations, etc. For use with Air Track. Comes complete with 2 Photo gates. - AIR SOURCE, QUIET: For use with Air Tracks, Air Tables or other apparatus which require air. Low noise, powerful motor produces clean air for experiments. Comes complete with hose. Operates on 110V AC, Size 8 x 8 x 13.			
9	Deluxe Free Fall Apparatus with Pendulum with Digital Timer	Items in a set: - An electromagnetic device that holds the ball in place - A digital timer to record all statistics of the experiment - 3 moveable photo gates (photo sensors) in the middle part of the frame, and a receiving ne. - 18mm steel ball - Plumb line - Pendulum - All cables and plugs, - Manual instructions Feature: 1. Free Fall Apparatus with Pendulum - An essential piece of equipment in basic dynamics studies. - Can be used for qualitative and quantitative study of free falling bodies for demonstration experiments (acceleration due to gravity.) - Unit is mainly made of an aluminum alloy; equipped with a scale. - The three photo gates on the vertical rod can be freely moved to any position and can be easily read against the bright yellow scale - The vertical rod is fixed on a solid tripod base and can be easily adjusted to true vertical by means of the leveling bolts on the tripod base and the included plumb line - Overall height of instrument: 5.25' (1.6m) - Overall height of experiment: 4.9' (1.5m) - Power of electromagnet: 6 volt - Diameter of steel ball: 18mm - Relative errors on measuring g: (the acceleration of free fall) 2% 2. Digital Timer for Deluxe Free Fall Apparatus - Designed specifically for the Deluxe Free Fall Apparatus for studying free-falling motion, uniform variable motion, & the period of a simple pendulum in Physics. - Displays 3 individual times of a small ball with free-falling body motion (with the 3 photo gates included) - Displays 3 individual interval times of the free-falling steel balls (for measuring g with 2 photo gates) - Displays 3 individual times of light blocking - Measures the period of a simple pendulum (the isochronisms of a simple pendulum can be validated) - Highly accurate and reliable, this unit records in milliseconds (ms) and can store up to 17 events.	5	2500	12500
10	Gyroscope With Counterpoise Oscillation of a simple pendulum	Feature: - The circular frame has an accurately centered wheel and an adjustable counter poise. - For demonstrating centripetal and centrifugal force. It includes: - A protractor 300 x 200 mounted on shaft, attached to a stand, to measure the amplitude of the oscillations - A wire 50 cm long and its adjustment system - Two brass balls (Ø 30 mm / 112 g and ø 20 mm / 34 g) - An aluminum ball (diameter 30 mm / 38 g) Feature: This device can introduce the notion of a simple pendulum model and show the influence of physical or not the period of oscillations, such as: - The length of the wire - The mass of the object - The amplitude of the oscillations (law of the isochronisms of small oscillations).	5	1000	5000
11	Experiment of optic's light	Items required: - Class 2 Laser Source - Optical bench - Sized slots - Box 30 GEO optical - Semi-circular lens - Triple-slit of YOUNG Feature: - Focal of lens experiment - Refraction of light experiment - Diffraction of light experiment - Interference of light experiment	5	450	2250
12	Boyle's Gas Law Apparatus Advanced	Items in a set: - Metal base 6.25inch (160mm) x	5	1000	5000

		4.75inch(120mm) x 1.25inch(30mm). - Piston barrel size 4.25inch(110mm) x 1.25inch(32mm) dia. - Pressure gauge dia. 2"(50mm), reading -10 to 30 N/cm square. * Requires one AA battery for digital thermometer, not supplied. Feature: - Excellent apparatus to study Boyle's Gas Law. Very easy to study and demonstrate the relationship between the pressure, temperature, and volume of a gas that is constant. The volume of the air can be easily changed by turning the piston and the pressure and temperature can be noted from the gauges. By repeating the process, the law can be confirmed			
13	**Computer Lab**	- Dell Optiplex 790 o CPU Core i5 3.3GHz o Ram DDR3 4GB o HDD Sata 1000GB o DVD RW Double Layer o Network 10/100/1000 o Monitor: LCD Dell E1912H 18.5"	124	725	89900
		- Computer Table + Chair	124	70	8680
		- Switch TP-Link 48 Port 10/100	4	85	340
		- Network Cable CAT6 300M	8	8	64
		- Connector CAT6 100Pcs	8	17	136
		- Trum for cable	200	4	800
		- Printer HP LaserJet Pro 2035N	4	280	1120
		- Scanner HP Scanjet G4010 L1956A	4	215	860
		- SONY Projector VPL-EW130 3000 Lum WXGA	4	965	3860
		- Star Tripod Projector Screen 96x96 inch (2.4m)	4	150	600
		- Samsung Air-conditioners	8	600	4800
		- Hitachi FXTRIO-88W Interactive Whiteboard	4	1700	6800
		Soft ware: - Mathcad - MathLab - Maplesoft - SPSS	1	400	400
		- Interactive Physics Simulation Software 50-User (Network License)	3	3000	9000
					$534,810

IV. DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE

1	Direct Shear Test apparatus	- TECHNOTEST, Model T 665/N - Max. force forward/reverse: 6 kN - Speed range: 0.00001 – 7 mm/minute - Different speeds may be selected for forward and reverse drive - Speed/load limitations: none - Displacement movements: 0,03 µm - Rapid approach speed (unloaded): 12 mm/min. - Forward/reverse cycles: programmable up to 20 mm - Number of cycles: no limit to number which may be programmed - Microswitches prevent piston overtravel and dynamometer overload - Leverage system allows applied weights to be amplified by 10, 9, 7.92 and 6.125 - A small hand wheel serves to sustain/release the vertical load - Supports are provided for transducers, dial gauges and dynamometers.	1	13000	13000
2	CBR compression machine	- Electric C.B.R. Test Machine- 50 kN (ASTM D 1883, AASHTO T193, UNI 10009, BS 1377, 1924)	1	12000	12000
3	Plate Test apparatus	- This apparatus has a load gauge with a 200 mm diameter and with full range equal to 500 kN and graduations every 2 kN. Precision class 0.5. The load distribution plate is in galvanized steel.	1	7000	7000
4	Ductility Test apparatus	- The apparatus is stainless steel made. Cooling coil, water circulating pump, thermostat (± 0.1°C), digital display, gear reduction unit for mould feed, manual tensile stress carriage. Suitable for testing 3 samples simultaneously. - Electric motor: 0.25 hp. Graduated scale. - Standard carriage stroke: 1500 mm. Supplied complete with moulds and 3 mould plates (ASTM - AASHTO). - 220 V, 50 Hz, single phase, 850 W.	1	8000	8000
5	Tri-axial compression Test apparatus	- Dynatriax, dynamic triaxial basic system, ±5 kN cyclic, on a 50 kN load machine. 110-240 V, 50-60 Hz, 1 ph. - Triaxial cells (Tri-Cell Plus models)	1	91000	91000
6	Bending test apparatus	- Maximum ram load strength: 160 kN - Piston stroke: 550 mm - Thrusting head precision guide - Distance between the rollers adjustable from 75 to 580 mm - Hydraulic valve for speed adjustment - Pressure check gauge - Safeguard device in polycarbonate - Bench with shelves for accessories - Dimensions: 1650 x 700 x 1150 (h) mm; weight 350 kg - Power Supply: 220 V, 50 Hz, single phase, 1500 W	1	8500	8500
7	Blaine Fineness Apparatus	- Blaine Fineness apparatus according to ASTM C 204, AASHTO T 153 - tecnotest model C378	1	2000	2000
8	Compression Testing Device	- tecnotest model C 362	1	1500	1500
9	Flexure Testing Device	- tecnotest model C 362/F	1	1500	1500
10	Calibration equipment for compression machine	- Maximum Load 3000kN	1	15000	15000

11	Drawing tables	- Architectural drafting table	30	250	7500
12	Chair	- Adjustable sit height chair	30	65	1950
13	Plotter	- Print up to A0 size - Color and B&W printing option	1	9500	9500
14	Computer	- Dell OptiPlex(TM) 990 Mini Tower	30	1079	32370
15	LCD Projector	- Dell 4320 Projector	3	1599	4797
16	Architectural Books	- Modern Architectural Design - Urban Planning - Landscape Design	30	120	3600
		TOTAL			**$219,217**

V. DEPARTMENT OF GOE- RESOURCES AND GEO-TECHNICAL ENGINEERING

1	Gravimeter	PROSPECTOR 410	24,000	1	24,000
2	Magnetometer	”CRONE” magnetomete	9,500	1	9,500
3	Electro-magnetometer	CUGTEM-4	14,500	1	14,500
4	Theodelite	Nedo - *Digital Theodolite*	15,000	5	75,000
5	Mohs hardness minerals	Mohs Mineral Hardness Scale Set	20	10	200
6	XRF (X-ray fluorescence):	Xepos (Rigaku, Japan)	100,000	1	100,000
7	Ball mill	40cmx45cm (mill) Max size50mm, Min size 9.5mm (Ball)	3,500	1	3,500
8	Heavy liquid mineral separation setup	86760-1L	850	1	850
10	Furnace	High temperature muffle furnace (KJ-1700X)	10,000	1	10,000
11	Mechanical testing machine	Instron 5982	90,000	1	90,000
12	GIS software	ArcGIS 10 for Desktop	8,000	1	8,000
13	Desktop	DELL Vostro 260MT (DE 755)	750	30	22,500
14	Laptop	VAIO VPC-EH2DFX/B (LB-519)	1,450	2	2,900
15	Plotter	HP Z6100 Q6651C Designjet Color Inkjet Printer	9,500	1	9,500
16	Seismometer	School Seismometer	600	2	1,200
17	Reservoir modeling software	JOA ® Oil & Gas | JewelSuite™	10,000	1	10,000
		TOTAL			**$381,650**

VI. DEPARTMENT OF INDUSTRIAL AND MECHANICAL ENGINEERING

1	Torsion Testing Machine	Type: Electromechanical torsion Frame: Horizontal Maximum Capacity: 300 N.m Max Speed: 40 rpm Accessories: MTESTQuattro and Torsion Grips (full set).	1 set	40000	40000
2	Environmental Applications Learning System – T7083	Real World Thermal Effects Interface to T7082 Thermal System Performance Analysis under Variable Conditions Built-In Instrumentation Electrical Power: 1-Phase, 230 VAC, 50 Hz, 7.5 Amps Accessories: Amatrol Workstation,	1 set	30000	30000
3	Accessories for pressure transducer 6052C	+Mounting sleeve 6525 asp, +spark plug adapter 6518B, +Glow plug adapter 6531O, +Dummy sensor 6445, +Cable 1929A1, Cable 1705, +Mounting key 1300A9, Torque wrench 1300A17, +Special tap 1357A, +Extraction tool 1319, +O-ring for mounting sleeveve 6525, +Finishing tool 1300A79, Finishing tool 1300A79Q01, +Step drill 1300A51	2 set	1000	2000
4	Charge amplifier SCP (Signal Conditioning Plateform)	Number of channel: 2, Measurement range: Resolution <0.1% , Error <0.5%, Power supply module : SCP, Signal input: TRIAX, Signal Output: BNC neg. Included accesorries, Optional accessories: Adapter BNC neg.-TRIAX neg.1704A1, adapter KIAG 10-32 neg.-TRIAX neg.1704A2	2 sets	5000	10000
5	Irox Diesel analyzer	Response time: 3 min. Warm-up time: 10 min. Communication: MINIWIN IROX-PC, Power requirment: 230v/ 50Hz Operating accessories, 6-position sampler, portable field application, PC/Printer Interface, MINIWIN IROX-PC software.	1 set	30000	30000
6	Portable gasoline analyzer	Response time: 3 min. Warm-up time: 10 min. Communication: MINIWIN IROX-PC, Power requirment: 230v/ 50Hz Operating accessories, 6-position sampler, portable field application, PC/Printer Interface, MINIWIN IROX-PC software.	1 set	30000	30000
7	Crank angle encoder	TTL crank angle resolution: 0.1...6, Dynamic accuracy at 10000rpm: Signal delay +0.02, Speed range: max.20000, Current consumption: 200 mA Remote controle unit: Type 2613B5, AVL adapter cable type 2613B6	1 set	5000	5000
8	TDC sensor system	Adapter M10x1, M14x1,25, Power supply 230/115 Volt ±10 %, 50-60 Hz, 3,2 VA, Connection: Power plug, 4 pin socket for TDC amplifier, BNC socket for TDC signal output Adapters: Types 6592A1 M10x1,6592A2 M14x1,25, 6592A3, M14x1,25 tapered	1 set	2000	2000
9	MINIHYD Karl Fischer Titrator	Designed for the determination of water content in oils. Titration methode: Coulometric Karl Fischer titration, Electrolysis control: Patented ACE control system, Measuring range: 1ug-100mg water, Moisture range: 1ppm-100% water, Max. sensitivity: 0.1ug, Max.Titration speed: 2mg/min, Display: ug, mg/kg, ppm, % , Data Transfer RS 232 output Accessories: Result manager, Coulometric Reagents	1 set	10000	10000
10	MINIFLASH TOUCH Flash Point Tester	MINIFLASH TOUCH is a uniquely designed flash point tester for the determination of flashpoints of liquids and solids Temperature range: 0-400 C, Power requirement: 230V AC 50Hz, 150W, Field Application: 12V/8A DC, Repeatability : 1.9C	1 set	15000	15000

		Accessories: Printer			
11	Cloud point and Pour Point tester	Number of Bath: 4, Bath Temperature: 0, 18, -33, -51 deg.C, Sample per bath: 4, Mechanically Refrigerated Using Ozone Friendly Non-CFC and Non-HCFC Refrigerants Accessories: Operating accessories	1 set	15000	15000
12	PetroOXY Oxidation Stability (Automatic Model)	Temperature range: up to 200 deg.C, Pressure sensor: 0-2000 kPa, Oxidation stability defined as: time elapsed until Pressure = Pmax - 10%, Repeatability: better than 5%, Sample Volume: 5 ml, 230VAC, 50 Hz Accessories: PetroOXY Logger-software, active re-cooling device	1 set	12000	12000
13	Dual Purpose Refrigerant & Combustible Gas Leak Detector	DUAL Deluxe Refrigerant/Combustible Informant® 2 Detector Kit. Instrument comes with refrigerant and combustible gas sensors, color-coded sensor tips, protective rubber boot, flashlight, instruction manual, 6 AA batteries, and 5 filters all packaged in a hard carrying case. +Acessories: Replacement combustibles sensor (19-0499), Replacement refrigerant sensor (19-0510), Replacement filter (19-0509)	1 set	800	800
14	Bacharach's IEQ Chek™ air quality diagnosis	CO2 (0-5,000 ppm), TVOC (0-300ppm), CO, Pump, Ext. Battery, DataLogging Acessories: DataLogging Option (1509-0001), 10" probe w/30" of sample hose (1509-0003), Battery Pack (1509-0005)	1 set	3000	3000
15	Infrared Thermometer (TH8000)	Temperature: -4 to 752°F (-20 to 400°C) Laser Pointer Resolution: 1°F / 1°C Includes soft carrying case and battery	2 sets	180	360
16	Diagnostic Refrigerant Analyzer	Detection Principle: Non-Dispersive Infrared (NDIR); Single Detector w/ 13 Unique Filters Refrigerant: R22, R134A, R404A, R407C, R410A, Hydrocarbons, and More Accuracy: +/- 1-2% for Measured Refrigerants Acessories: Rechargeable Battery Kit (2100-0007), Low Pressure Vapor Sample Hose (2100-0008), Spare Low Pressure Sample Hose Filter (2100-0010), High Pressure Liquid Sample Hose Assembly (2100-0009), Replacement Sample Filter (2100-0006), Printer Paper (2100-0003)	1 set	4800	4800
17	FM-3700 Recovery Machine	Refrigerants: All refrigerants except R-11, R-113 and R-123 Power Source: 230 VAC 50/60 Hz Compressor: 1 HP twin piston, high performance, oil les Vacuum Rating: 13" Hg+ High Pressure Limit: 450 PSI Recovery Rate: 0.50-4.0 lbs./min. vapor, 8.0 lbs./min. liquid	1 set	1700	1700
18	PCE-423 Air velocity meter	The PCE-423 air velocity meter with thermal sensor Resolution - m/s 0,01 - Air temperature 0,1 ºC Accuracy - Air velocity ±5 % ±1digit (of the measurement field) - Temperature ±1 °C Interface USB	2 sets	230	230
19	TPS 2500 S Thermal Conductivity System	The Hot Disk Transient Plane Source TPS 2500 S Materials: Solids, Liquids, Powders & Paste Thermal Conductivity: 0.005 to 500 W/mK Thermal Diffusivity: 0.1 to 100 mm2/s Specific Heat Capacity: Up to 5 MJ/m3K Accuracy: Better than 5% Sensor Types: Kapton insulated with or without cable (from cryogenic temperatures up to 180°C). Mica insulated without cable (Room Temp. up to 750°C).	1 set	35000	35000
20	XS603S Precision Balance	Max Capacity: 610g Readability: 1 mg Repeatability: 0.9 mg Linearity: 2 mg Acessories: USB-RS232 converter cable, CarePac® 500 g / 20 g	1 set	3600	3600
21	MS32000LE Precision Balance	Max Capacity: 32200 g Readability: 1 g Repeatability: 0.5 g Linearity: 1 g Acessories: USB-RS232 converter cable, CarePac® 5000 g / 200 g	1 set	4000	4000
22	Heating/Refrigerated Circulator	6 Liters, Temperature Range -20 to 200 Degrees C Temperature Stability ± 0.01 Degrees C Readout Graphic LCD Readout Accuracy +/- 0.25 Degrees C Pump Type Pressure/Suction Cooling Capacity @ 20°C 200 Watts Cooling Capacity @ 0°C 140 Watts Cooling Capacity @ -10°C 100 Watts Over-Temperature Cutoff Adjustable Low-Liquid Cutoff Yes Heater 1100 Watts, 220V	1 set	2600	2600
	Drop Weight Impact Testing Machine	per ASTM E-208 Drop weight 136kg	1 set	15000	15000
23	Desktop PC	Intel® CoreTM i7 (2600, 2600S), 4GB Dual Channel DDR3 SDRAM at 1333Mhz - 4 DIMMS, Intel® Q65 Express Chipset, DUAL 1GB AMD RADEON HD 6450, 500GB SATA hard drive (7200RPM), DVD+/-RW, 19" Monitor, UPS	5 sets	800	4000
24	Laptop PC	Intel® Core™ i7-2640M processor (2.80GHz / 3.50GHz with Turbo Boost) Genuine Windows® 7 Professional 64-bit 13.3" LED backlit display (1600x900) AMD Radeon™ HD 6630M (1GB) hybrid graphics with Intel® Wireless Display technology 500GB (5400rpm) hard drive 4GB (4GB fixed onboard + 1 open SDRAM slot)	4 sets	1300	5200

		DDR3-SDRAM-1333 CD/DVD burner Internal lithium polymer battery (4400mAh)			
25	Toshiba TLP-X3000AU Projector	High-performance TLP-X3000AU features 3LCD technology for excellent color reproduction, an impressive 3,000 ANSI lumens for an incredibly bright display in normal mode or to conserve energy, the projector can be switched to Eco-Mode, allowing users to extend the lamp life up to 3,000 hours. Accessories: Mustang MV-PROJSP-Flat Universal Projector Mount	4 sets	1250	5000
26	Laser Printer	Smart paper handling, Networkable, Single Cartride System	3 set	500	1500
27	Laser Printer	Smart paper handling, Networkable, Single Cartride System	2 sets	400	800
28	Kapersky Internet Security	Latest version	40 Licences	15	600
29	LEECO Desk	1600(W) x 700(D) x 740(H) mm. Net Weight 54 Kgs.	8 sets	200	1200
30	LEECO Sliding Cabinet	881(W) x 407(D) x 880(H) mm.	8 sets	240	1920
		TOTAL			**292310**

VII. DEPARTMENT OF ELECTRICAL AND ENERGY ENGINEERING

1	Synchronous machines	Synchronous machines (4-5Kw)	1	6,000	6000
2	Kit set mechanic calculator	Kit set (mechanic, calculator, motor drive, sensor)	1	25,000	25000
3	DC machine	DC machine (4-5Kw)	1	5,000	5000
4	Mobile Communication trainer kit	Mobile Communication trainer kit	3	5,000	15000
5	EMI/EMC Training System	EMI/EMC Training System	1	8,000	8000
6	Noise Figure Analyser NFA10	Noise Figure Analyser NFA10	2	3,000	6000
7	Optical Time-Domain Reflectometer (OTDR)	Optical Time-Domain Reflectometer (OTDR)	2	5,000	10000
8	Power Meter	Power Meter	1	4,000	4000
9	Optical attenuator	Optical attenuator	1	3,000	3000
10	Tunable Laser Sources/LED Sources	Tunable Laser Sources/LED Sources	2	4,000	8000
11	Optical Modulation Analyzer	Optical Modulation Analyzer	1	8,000	8000
12	Fiber Cables (outdoor and Indoor)	Fiber Cables (outdoor and Indoor)	1	2,000	2000
13	Optical splicer	Optical splicer	1	6,000	6000
14	Telecom Lab: - Swiching Modul support	Telecom Lab: - Swiching Modul support Frame Relay;ATM;Gigabit Ethernet;PBX and VOIP	1	15,000	15000
15	Advanced electrical power system and power plant simulator	Advanced electrical power system and power plant simulator	1	120,000	120000
16	Solar radiation meter - SPM72	Solar radiation meter - SPM72	5	300	1500
17	Photovoltaic inverter 2 KW	Photovoltaic inverter 2 KW	1	2,500	2500
18	IV curve tracer 600V, 10A	IV curve tracer 600V, 10A	1	9,000	9000
19	Laptop	Laptop	1	1,500	1500
20	Solar Panel Sharp 150 watt / 24V	Solar Panel Sharp 150 watt / 24V	10	900	9000
21	Programmable electronic load (4 KW, 400V, 10A)	Programmable electronic load (4 KW, 400V, 10A)	5	210	1050
22	Desktop	Desktop	2	800	1600
23	Electrical Network Analyzer AD6830-07	Electrical Network Analyzer AD6830-07	2	3,000	6000
24	Power quality analyzer phase	Power quality analyzer phase with clamp MN93A to 12Aca - CA8230	2	2,100	4200
25	Electrical Safety Checker facilities (E)- CA6114	Electrical Safety Checker facilities (E)- CA6114	2	1,820	3640
26	Wattmeter Clamp AC / DC AD3348	Wattmeter Clamp AC / DC AD3348	5	300	1500
27	Portable Multimeter AD9804A	Portable Multimeter AD9804A	5	60	300
28	Clamp measurement of earth and leakage current AD6412	Clamp measurement of earth and leakage current AD6412	1	1,350	1350
29	TESTO 0560 4353	TESTO 0560 4353, 435-3 Multifunction HVAC and IAQ Meter with Differential Pressure	1	1,000	1000
30	COMARK N8004	COMARK N8004, 3060110 Temperature/Humidity Tester W/Probe & Flexible Lead	2	700	1400
31	Laboratory accessories and installation	Laboratory accessories and installation	1	10,000	10000
32					
33	Control Desk	Control Desk	1	46,335	46335
34	Single-Phase AC Voltage Test Transformer	Single-Phase AC Voltage Test Transformer	1	39,527	39527
35	Earthing Rod	Earthing Rod	1	2,180	2180
36	Connecting Rod	Connecting Rod	4	415	1660
37	Connecting Cup	Connecting Cup	7	485	3395
38	Floor Pedestal	Floor Pedestal	7	547	3829
39	HV Silicon Rectifier	HV Silicon Rectifier	2	5,855	11710
40	Impulse Capacitor, 25 nF	Impulse Capacitor, 25 nF	2	7,500	15000
41	Measuring Resistor	Measuring Resistor	1	5,855	5855
42	Earthing Switch	Earthing Switch	1	16,352	16352
43	Spacer Tube	Spacer Tube	5	325	1625

44	Load Capacitor	Load Capacitor	1	8,182	8182
45	Charging Resistor	Charging Resistor	1	5,605	5605
46	Wave Front Resistor	Wave Front Resistor	1	7,385	7385
47	Wave Tail Resistor	Wave Tail Resistor	1	7,385	7385
48	Insulating Rod	Insulating Rod	2	820	1640
49	Sphere Gap	Sphere Gap	1	8,182	8182
50	Electrical Drive for Sphere Gap	Electrical Drive for Sphere Gap	1	7,500	7500
51	Top Electrode	Top Electrode	1	817	817
52	Measuring Capacitor / 100	Measuring Capacitor / 100	1	10,267	10267
53	Component Stand	Component Stand	2	2,307	4614
54	Trigger Device	Trigger Device	1	12,267	12267
55	Low Voltage Divider	Low Voltage Divider	1	2,047	2047
56	Electronic Trigger Sphere	Electronic Trigger Sphere	1	14,312	14312
57	Digital AC Peak Voltmeter	Digital AC Peak Voltmeter	1	12,267	12267
58	Digital DC Voltmeter	Digital DC Voltmeter	1	4,775	4775
59	Digital Impulse Voltmeter	Digital Impulse Voltmeter	1	14,992	14992
60	Measuring Spark Gap for AC, DC, IMPULSE	Measuring Spark Gap for AC, DC, IMPULSE	1	27,395	27395
61	Spacer Bar for HV 9133	Spacer Bar for HV 9133	1	313	313
62	Oil Testing Cup for AC, DC	Oil Testing Cup for AC, DC	1	1,373	1373
63	Load Resistor, DC	Load Resistor, DC	1	6,660	6660
64	Vessel for Vacuum and Pressure for AC, DC, IMPULSE	Vessel for Vacuum and Pressure for AC, DC, IMPULSE	1	28,418	28418
65	Corona Cage for AC, DC	Corona Cage for AC, DC	1	7,283	7283
66	Compressed Gas Capacitor for AC	Compressed Gas Capacitor for AC	1	47,723	47723
67	Partial Discharge Meter for AC	Partial Discharge Meter for AC	1	184,720	184720
68	Coupling Capacitor	Coupling Capacitor for Partial Discharge Measurement	1	42,200	42200
69	High Voltage Connection	High Voltage Connection	1	1,098	1098
70	Filter insert for Broadband Bandwidth 40-220 kHz	Filter insert for Broadband Bandwidth 40-220 kHz	1	36,675	36675
71	Vacuum Pump VAC 11255, 100 l / min	Vacuum Pump VAC 11255, 100 l / min	1	20,575	20575
72	Compressor MT 0625, Pressure 8 bar	Compressor MT 0625, Pressure 8 bar	1	7,910	7910
73	Safety Cage	Safety Cage for Stage 1, 2 and 3	1	20,700	20700
74	Installation and Training	Installation and Training	1	49,450	49450
75					0
76	Automation Control Kit lab	Automation Control Kit lab	1	20,000	20000
77	Mechatronic Control Kits (a complete control lab in single package)	Mechatronic Control Kits (a complete control lab in single package)	1	30,000	30000
78	Autonomous mobile robot for teaching	Autonomous mobile robot for teaching	1	20,000	20000
79	CPIC Computer Controlled Process	CPIC Computer Controlled Process Control Plant with Industrial Instrumentation and Service Module (Flow, Temperature, Level and Pressure)	1	20,000	20000
80	0610: PLC Trainer; 0620: PLC	0610: PLC Trainer; 0620: PLC Process Emulators Applications Module; 0621: PLC Small Scale Real Applications Module; 0633/10S: Industrial PLC (Any); 0650: Automation & System Module;	4	15,000	60000
81	1000. Process Control; 1010: Process Control. Basic Module.	1000. Process Control; 1010: Process Control. Basic Module.; 1010/PLC: PLC's Module; 1011: Process Control. Medium Module; 1011/PLC: PLC's Module; 1020: Industrial Process Module; 1020/PLC: PLC's Module; 1000/ESN: EDIBON Scada-Net for Process Control units;	4	20,000	80000
82	The Hydraulics training systems:	The Hydraulics training systems: - HYD 2001 Universal Master Board for HYD 2000 Panels -HYD 2003 Hydraulic Power Unit for HYD 2000 Laboratory ---- HYD 2100 Basic Hydraulics Training Package -HYD 2200 Advanced Hydraulics Training Package - HYD 2300 Basic Electro-Hydraulics Training Package - HYD 2400 Advanced Electro-Hydraulics Training Package - PLC-100 Programmable Logic Controller - HYD 2160 Accessories Set for HYD 2000 Laboratory	4	15,000	60000
83	Level Liquid Filling Machine (Automatic) Model: APLFM-N4	Level Liquid Filling Machine (Automatic) Model: APLFM-N4	1	12,000	12000
84	HFLC system	HFLC system: Linear speed control; Linear position control; Single inverted pendulum; Self-erecting IP; Dual inverted pendulum; Double inverted pendulum; Triple inverted pendulum; Single pendulum Gantry; Double pendulum Gantry; Triple pendulum Gantry	1	15,000	15000
85	Servo Motor	Servo Motor with Tachometer Model: SRV02-E(-T)	6	1,500	9000
86	Motor Servo	Motor Servo with Encoder Model: SRV02 E	6	1,500	9000
87	Ball and Beam Sensor;	Ball and Beam Sensor;	2	500	1000
88	Self-erecting Rotary IP	Self-erecting Rotary IP	2	1,200	2400
89	Rotary Flexible Joint	Rotary Flexible Joint	2	800	1600
90	Flexible Link	Flexible Link	2	1,000	2000
91	Couple Tank	Couple Tank	1	3,000	3000
92	Heat Flow	Heat Flow	1	2,500	2500
93	PCI Data Acquisition Board	PCI Data Acquisition Board (Model: QPID)	10	2,500	25000
94	USB Data Acquisition Board (Mode: Q8-USB)	USB Data Acquisition Board (Mode: Q8-USB)	5	2,000	10000
95	VoltPAQs Amplifier	VoltPAQs Amplifier (Model: VoltPAQ-X1)	8	500	4000
96	VoltPAQs Amplifier	VoltPAQs Amplifier (Model: VoltPAQ-X2)	6	700	4200

97	VoltPAQs Amplifier	VoltPAQs Amplifier (Model: VoltPAQ-X3)	4	1,000	4000
98	Control Design Software QUARC	Control Design Software QUARC	1	2,000	2000
99	The Mechatronics Control Kit	The Mechatronics Control Kit	1	4,000	4000
100	Tektronix MOC304 4	Tektronix MOC304 4-Channel Analog & 16 Digital Input ports	1	15,000	15000
101	Tektronix TDS2024B	Tektronix TDS2024B 4-Channel Color Scope	8	2,200	17600
102	NI USB-6009 Complete Package	NI USB-6009 Complete Package	5	350	1750
103	NI PCI-6024E	NI PCI-6024E	15	1,100	16500
104	NI PCI-6602	NI PCI-6602	10	1,600	16000
105	Cable - Shielded SH68-68-D1 Cable (2m)	Cable - Shielded SH68-68-D1 Cable (2m)	30	200	6000
106	Connector CB-68LP	Connector CB-68LP	30	100	3000
107	Desktop Dell Processor Core I5 Memory Ram 4GB Monitor 17"	Desktop Dell Processor Core I5 Memory Ram 4GB Monitor 17"	20	800	16000
108	ABB Robot Arm Model : IRB 140	ABB Robot Arm Model : IRB 140	1	30,000	30000
109	2 DOF Planar Robot	2 DOF Planar Robot	1	4,000	4000
110	Autonomous robot: Qbot	Autonomous robot: Qbot	1	2,500	2500
111	Humanoid Robot KT-X Gladiator	Humanoid Robot KT-X Gladiator	1	2,000	2000
112	Sanner A4	Sanner A4	2	300	600
113	Multifunction Photo copier/printer/scaner A4/A3	Multifunction Photo copier/printer/scaner A4/A3	1	4,000	4000
114	Printer Color Laser A4	Printer Color Laser A4	1	1,200	1200
115	Printer Laser A4	Printer Laser A4	2	500	1000
116	LCD Projector	LCD Projector	2	1,500	3000
117	Laptop & accessories	Laptop & accessories	5	2,000	10000
118	Office tools (table, chairs, ...)	Office tools (table, chairs, ...)	1	5,000	5000
119	Workshop accessory	Workshop accessory	1	5,000	5000
120	Installation	Installation	1	50,000	50000
121					0
122	CNC Vertical Milling Machine & 5 extra tool set	CNC Vertical Milling Machine & 5 extra tool set	1	30,000	30000
123	CNC Turning Machine & 5 extra tool set	CNC Turning Machine & 5 extra tool set	1	30,000	30000
124	The QNET DC motor control	The QNET DC motor control	1	15,000	15000
125	3 DOF Gyroscope	3 DOF Gyroscope	1	3,000	3000
126	Quadrotor for indoor unmanned aerial vehicle	Quadrotor for indoor unmanned aerial vehicle	1	4,500	4500
127	Maxon DC motor 12V, RE-Max 26	Maxon DC motor 12V, RE-Max 26	10	380	3800
128	Maxon DC motor 24V, RE-Max 29	Maxon DC motor 24V, RE-Max 29	10	450	4500
129	Maxon DC motor 12V, RE-Max 20	Maxon DC motor 12V, RE-Max 20	20	250	5000
130	Motor Drive LMD18200	Motor Drive LMD18200	100	20	2000
131	Inertial measurement unit Mti-G	Inertial measurement unit Mti-G	2	2,000	4000
132	IMU 6DOF v4 Sensor Board	IMU 6DOF v4 Sensor Board	5	350	1750
133	IMU Analog Combo Board	IMU Analog Combo Board - 5 Degrees of Freedom IDG500/ADXL335	10	45	450
134	Dual Motor GearBox	Dual Motor GearBox	100	10	1000
135	Hibot 1-Axis DC power	Hibot 1-Axis DC power module motor drive	50	80	4000
136	Photo sensor	Photo sensor HOKUYO : URG-04LX	2	2,200	4400
137	Multi-purpose workstations	Multi-purpose workstations	10	1,200	12000
138	CNC Milling	CNC Milling 5 Axis Auto tool changer & 5 extra tool set	1	300,000	300000
139	Jet 690410 JTM 4VS	Jet 690410 JTM 4VS 1 Mill with VUE 3-Axis Quill DRO and X-TPFA	1	15,000	15000
140	Jet 321126 Gh 1340W	Jet 321126 Gh 1340W 1 with 411 DRO, Tak and collect Closer	1	15,000	15000
141	Dimension 1200es	Dimension 1200es Series 3D Printers + Materials	1	35,000	35000
142	Drilling Machine	Drilling Machine	4	250	1000
143	Drilling	Drilling and Cutting Tools for CNC and Drilling Machine All size	1	10,000	10000
144	Building Management System	Building Management System & Energy Audit tool	1		100000

				100,000	
145	Digital Camera Sony	Digital Camera Sony alpha 10 Mpixels & accessories	1	3,500	3500
146	Resistors (with the power of 1/2W, 1/4W, 1/8W and all size of resistance) 10,000 for each	Resistors (with the power of 1/2W, 1/4W, 1/8W and all size of resistance) 10,000 for each	500000	0.02	10000
147	Potentiometers (with the power of 0.25W, 0.5W and all size of resistance) 1,000 for each	Potentiometers (with the power of 0.25W, 0.5W and all size of resistance) 1,000 for each	20000	0.30	6000
148	Ceramic Capacitors (with the voltage <= 500V and all size of capacitances) 1,000 for each	Ceramic Capacitors (with the voltage <= 500V and all size of capacitances) 1,000 for each	100000	0.02	2000
149	Electrolytic Capacitors (with the voltage <= 500V and all size of capacitances) 1,000 for each	Electrolytic Capacitors (with the voltage <= 500V and all size of capacitances) 1,000 for each	100000	0.05	5000
150	Inductors/ Coils (all sizes) 1,000 for each	Inductors/ Coils (all sizes) 1,000 for each	10000	0.30	3000
151	Crystals / Ceramic Resonators (4MHz, 6MHz, 12Mhz, 20MHz, …) 1,000 for each	Crystals / Ceramic Resonators (4MHz, 6MHz, 12Mhz, 20MHz, …) 1,000 for each	10000	0.15	1500
152	Relay (5V, 9V, 12V, …)	Relay (5V, 9V, 12V, …)	5000	0.80	4000
153	Switching Diodes	Switching Diodes	10000	0.01	100
154	Rectifier Diodes	Rectifier Diodes	10000	0.03	300
155	Zener Diodes (all reference voltage)	Zener Diodes (all reference voltage)	10000	0.03	300
156	7-segment Displays (single and double) 5,000 for each	7-segment Displays (single and double) 5,000 for each	5000	0.80	4000
157	LED Diodes (Red, Green, Yellow, White)	LED Diodes (Red, Green, Yellow, White)	10000	0.03	300
158	Bipolar Transistors (NPN and PNP)	Bipolar Transistors (NPN and PNP)	10000	0.20	2000
159	Power MOSFETs (N-channel and P-channel)	Power MOSFETs (N-channel and P-channel)	10000	0.60	6000
160	THYRISTORs	THYRISTORs	5000	0.20	1000
161	TRIACs	TRIACs	5000	0.60	3000
162	Op-Amps (1 & 2 circuits)	Op-Amps (1 & 2 circuits)	5000	0.50	2500
163	Current Sensors	Current Sensors	1000	3.00	3000
164	Motion Sensors	Motion Sensors	200	15.00	3000
165	Pressure Sensors	Pressure Sensors	100	30.00	3000
166	Humidity Sensors	Humidity Sensors	200	15.00	3000
167	Thermistors	Thermistors	1000	0.50	500
168	Precision Temperature Sensors	Precision Temperature Sensors	1000	0.75	750
169	Temperature to voltage controllers	Temperature to voltage controllers	1000	0.60	600
170	1-Wire Digital Thermometers	1-Wire Digital Thermometers	1000	1.80	1800
171	Infrared LED	Infrared LED	5000	0.07	350
172	IR Receiver Module	IR Receiver Module	1000	0.16	160
173	Phototransistors	Phototransistors	1000	0.12	120
174	Photodiodes	Photodiodes	1000	0.75	750
175	Optical Interrupters	Optical Interrupters	1000	0.60	600
176	Dual Full Bridge Drivers	Dual Full Bridge Drivers	1000	1.25	1250
177	Dual Full Bridge PWM Motor Drivers	Dual Full Bridge PWM Motor Drivers	1000	1.30	1300
178	Bidirectional Motor Drivers	Bidirectional Motor Drivers	1000	1.10	1100
179	3 Phase Motor Drivers	3 Phase Motor Drivers	1000	4.00	4000
180	RS-232 Driver/Receiver	RS-232 Driver/Receiver	2000	0.60	1200
181	RS-485/RS-422 Transceivers	RS-485/RS-422 Transceivers	1000	1.20	1200
182	BeagleBoard-xM	BeagleBoard-xM	5	150.00	750
183	Zippy2 (Extension for BeagleBoard-xM)	Zippy2 (Extension for BeagleBoard-xM)	5	140.00	700
184	DV251001 - MCP2510 CAN DEVELOPERS KIT	DV251001 - MCP2510 CAN DEVELOPERS KIT	5	260.00	1300
185	Explorer 16 Demo Board (DM240001)	Explorer 16 Demo Board (DM240001)	5	140.00	700
186	Consumer-band BPSK 7.2kbps PLM PICtail Plus Daughter Board	Consumer-band BPSK 7.2kbps PLM PICtail Plus Daughter Board	5	250.00	1250
187	MRF24WB0MA Wi-Fi PICtail/PICtail Plus Daughter Board (AC164136-4)	MRF24WB0MA Wi-Fi PICtail/PICtail Plus Daughter Board (AC164136-4)	5	70.00	350
188	8-Bit Wireless Development Kit - 2.4 GHz IEEE 802.15.4 (DM182015-1)	8-Bit Wireless Development Kit - 2.4 GHz IEEE 802.15.4 (DM182015-1)	5	330.00	1650

189	KEELOQ 3 Development Kit (with PICkit 3) (DM303008)	KEELOQ 3 Development Kit (with PICkit 3) (DM303008)	5	180.00	900
190	dsPICDEM MCLV Development Board (DM330021)	dsPICDEM MCLV Development Board (DM330021)	5	165.00	825
191	24V 3-Phase Brushless DC Motor (AC300020)	24V 3-Phase Brushless DC Motor (AC300020)	5	135.00	675
192	24V 3-Phase Brushless DC Motor with Encoder (AC300022)	24V 3-Phase Brushless DC Motor with Encoder (AC300022)	5	175.00	875
193	dsPICDEM MCSM Development Board (DM330022)	dsPICDEM MCSM Development Board (DM330022)	5	140.00	700
194	Stepper Motor (AC300024)	Stepper Motor (AC300024)	5	100.00	500
195	PIC Microcontroller 8-bit	PIC Microcontroller 8-bit	2000	3.00	6000
196	PIC Microcontroller 16-bit	PIC Microcontroller 16-bit	500	5.00	2500
197	PIC Microcontroller 32-bit	PIC Microcontroller 32-bit	200	7.50	1500
198	Microchip Ics	Microchip Ics	1000	2.50	2500
199	PIC32MX 100P QFP TO 100P PLUG IN MODULE (MA320001)	PIC32MX 100P QFP TO 100P PLUG IN MODULE (MA320001)	10	30.00	300
200	PIC32 Starter Board to Explorer 16 PIM Adapter (AC320002)	PIC32 Starter Board to Explorer 16 PIM Adapter (AC320002)	10	35.00	350
201	FPGA & CPLD Devices, and Development Board	FPGA & CPLD Devices, and Development Board	2	7,500.00	15000
202	LabVIEW, Proton Studio, Others	LabVIEW, Proton Studio, Others	1	21,000.00	21000
203	Cables, Wires, Connectors, Sockets	Cables, Wires, Connectors, Sockets	1	5,000.00	5000
204	Desktop	Desktop	8	800.00	6400
205	Power supply DC double output 0-15V 3A	Power supply DC double output 0-15V 3A	8	1,000.00	8000
206	Generator Base functions	Generator Base functions	8	2,000.00	16000
207	Tektronix TDS2024B 4-Channel Color Scope	Tektronix TDS2024B 4-Channel Color Scope	8	2,200.00	17600
208	Office tools (table, chairs, ...)	Office tools (table, chairs, ...)	1	5,000.00	5000
209	Workshop accessory	Workshop accessory	1	5,000.00	5000
210	Installation	Installation	1	20,000.00	20000
211	NI PCIe-1435 High-Performance Camera Link Frame Grabber	NI PCIe-1435 High-Performance Camera Link Frame Grabber	2	2,500.00	5000
212	Camera, Basler scA640-70fm, IEEE 1394b, 659x490, 70 FPS	Camera, Basler scA640-70fm, IEEE 1394b, 659x490, 70 FPS	2	1,000.00	2000
213	NI PXI-1483R for FPGA Image Processing Camera Link Frame Grabber for NI FlexRIO	NI PXI-1483R for FPGA Image Processing Camera Link Frame Grabber for NI FlexRIO	1	17,000.00	17000
214	Cable, Power over Camera Link (PoCL), MDR to SDR, 5M	Cable, Power over Camera Link (PoCL), MDR to SDR, 5M	4	160.00	640
215	Pro Audio Development Kit (TMDSPDK6727)	Pro Audio Development Kit (TMDSPDK6727)	5	1,500.00	7500
216	TMS320C5416 DSP Starter Kit (DSK)	TMS320C5416 DSP Starter Kit (DSK)	5	400.00	2000
217	DM642 Evaluation Module	DM642 Evaluation Module	5	2,000.00	10000
218	TMS320DM357 Digital Video Evaluation Module	TMS320DM357 Digital Video Evaluation Module	5	900.00	4500
219	OMAP35x Evaluation Module (EVM)	OMAP35x Evaluation Module (EVM)	5	1,500.00	7500
220	PIC32MX USB PIM (MA320002)	PIC32MX USB PIM (MA320002)	10	30.00	300
221	Notebook	Notebook	3	2,000.00	6000
222	Others (soldering, wires, …)	Others (soldering, wires, …)	1	5,000.00	5000
223	XVD communication system (video conference system)	XVD communication system (video conference system)	1	40,000.00	40000
224	PCB Making Machine & 5 extra tool sets	PCB Making Machine & 5 extra tool sets	1	150,000.00	150000
225	CNC Laser Cutting Machine A0 board & 5 extra laser heads	CNC Laser Cutting Machine A0 board & 5 extra laser heads	1	50,000.00	50000
		TOTAL			**2,793,933.00**
		GRAND TOTAL FROM I to VII			**$5,163,244.00**

SOURCE) : ITC

添付資料 11　National Technical Training Institute（NTTI）
整備要請機材リスト

List of Equipment Requested by NTTI

No.	Equipment Name	Quantity	Unit Price	Amount USD $	Specification	Made in	Purpose of Usage
IV	**WELDING WORKSHOP**						
1	MIG-MAC Machine, SAT-MIG 480 TR 16	1	$1,000.00	$1,000.00			To welding other steel
2	MIG Aluminium, Alustar 360/500 BLS	1	$1,500.00	$1,500.00			To welding other steel
3	ARC WELDING, Safarc M 330	1	$600.00	$600.00			To welding other steel
4	ARC et TIG Redresseurs, Presto 250	1	$1,000.00	$1,000.00			To welding other steel
5	ARC et TIG Redresseurs, Prestopac 165	1	$1,200.00	$1,200.00			To welding other steel
6	ARC et TIG Redresseurs, Prestopac 165 AC/DC	1	$1,200.00	$1,200.00			To welding other steel
7	Weld-Trainer, Model LWT-3200	1	$1,000.00	$1,000.00			To welding other steel
TOTAL				**$7,500.00**			

Source:NTTI

添付資料 12　Preah Kossomak Polytechnic Institute（PPI）
整備要請機材リスト

List of Equipnet requested from PPI

No	Name of Equipment	Serial No	Quantity	Unit Cost	Amount	Specification	Made in	Purpose of Usage
I. ELECTRICITY								
	4-1 Basic Electricity **LIELBA Electrical Installations Integrated Laboratory :**							
1	Frame applications support	BASB or BASS	1 Set	$ 92,500	$ 98,975	Frame, Applications, Computer aided instruction software system, Electric power data acquisition system, Manual, Totally Safety System.	Made in Spain	Modules automatic anchorage system for Laborator teaching
2	**Applications :**							
	- Star-Delta starter	A11	1 Set	$ 3,000	$ 3,210	The part of Application Unit	Made in Spain	People safety against indirect electrical contacts in IT neutral regimen
	- Starter through autotransformer	A12	1 Set	$ 6,000	$ 6,420	The part of Application Unit	Made in Spain	Modular trainer (Ac motors)
	- Starter-inverter	A14	1 Set	$ 4,000	$ 4,280	The part of Application Unit	Made in Spain	Modular trainer (Ac motors)
	- AC wound rotor motor starter	A15	1 Set	$ 5,000	$ 5,350	The part of Application Unit	Made in Spain	Modular trainer (Ac motors)
	- Multi-functional electrical protection station	AE7	1 Set	$ 6,000	$ 6,420	The part of Application Unit	Made in Spain	Modular trainer (Ac motors)
	- Power and torque measurements of electrical motors	AE8	1 Set	$ 9,000	$ 9,630	The part of Application Unit	Made in Spain	Modular trainer (Ac motors)
	- Directional Relay: Earth fault detection. Directional power flow detection .Reactive power flow detection	AE9	1 Set	$ 15,000	$ 16,050	The part of Application Unit The part of Application Unit	Made in Spain Made in Spain	Earth fault detection . Directional power flow detection .Reactive power flow detection
	- Robbery alarm station kit	KD1A	1 Set	$ 2,000	$ 2,140	The part of Application Unit	Made in Spain	High safety (automatic earth connection system)
	- Fire alarm station kit	KD3A	1 Set	$ 1,500	$ 1,605	Installation cubicle, Kits, Computer aided instruction software system, Electric power data acquisition system, Manuals	Made in Spain	Detect automatic with fire (Technique used Laborator teaching)
	- Temporization of stairs kit	KD5	1 Set	$ 2,500	$ 2,675	The part of Kit Unit	Made in Spain	Temporization of stairs teaching
	- Luminosity control station kit	KD6A	1 Set	$ 4,000	$ 4,280	The part of Kit Unit	Made in Spain	Luminosity control teaching
	- Blinds activator kit	KD8	1 Set	$ 4,000	$ 4,280	The part of Kit Unit	Made in Spain	Blinds activator
	- Audio door entry system kit	KD13	1 Set	$ 7,000	$ 7,490	The part of Kit Unit	Made in Spain	Hearing unit
	- Robbery alarm station	AD1A	1 Set	$ 3,000	$ 3,210	The part of Kit Unit	Made in Spain	Robbery alarm
	- Fire alarm station	AD3A	1 Set	$ 2,000	$ 2,140	The part of Kit Unit	Made in Spain	Fire alarm
	- Temporization of stairs	AD5	1 Set	$ 4,000	$ 4,280	The part of Kit Unit	Made in Spain	Temporization of stairs teaching
	- Luminosity control station	AD6A	1 Set	$ 4,000	$ 4,280	The part of Kit Unit	Made in Spain	Luminosity control teaching
	- Blinds activator	AD8	1 Set	$ 2,500	$ 2,675	The part of Kit Unit	Made in Spain	Blinds activator
	- Heating control station	AD9A	1 Set	$ 4,000	$ 4,280	The part of Application Unit	Made in Spain	Heating control
	- Audio door entry system	AD13	1 Set	$ 4,000	$ 4,280	The part of Kit Unit	Made in Spain	Hearing unit
3	Home Automation Installation Trainer	EIV2	4 Sets	$ 7,000	$ 28,490	Electricity Demonstration Unit	Made in Spain	Demonstration teaching
4	Lamp Demonstration Panel	PDL	4 Sets	$ 15,000	$ 61,050	Electrical Installations Workshop	Made in Spain	Demonstration teaching in workshop
5	Electrical Cables Demonstration Panel	PDCE-S	4 Sets	$ 15,000	$ 61,050	Electrical Installations Workshop (signalling)	Made in Spain	Demonstration teaching in workshop
42								
6	Faults Simulation Trainer in Electrical Motor	ESAM	4 Sets	$ 12,000	$ 48,840	Faults Unit with Motor	Made in Spain	Faults Simulation Trainer in Electrical Motor
7	Alternators study Unit	EEA	4 Sets	$ 45,000	$ 183,150	Alternators Unit with Motor	Made in Spain	Alternators Study Unit
8	Disassembly Machines kit	EMT-KIT	4 Sets	$ 9,000	$ 36,630	Disassembly Machines	Made in Spain	Disassembly Machines
8								
9	Generator Unit	1AG1	4 Sets	$ 8,500	$ 34,595	Generator	Made in Spain	Energy power plants
	5-3 Alternative Energies							
10	Computer Controlled Thermal Solar Energy Unit	EESTC	4 Sets	$ 20,000	$ 81,400	Computer (Dell) Controlled Thermal Solar Energy Unit (HD500G RAM 4G CORE I5	Made in China	Alternative Energies
11	Photovoltaic Solar Energy Modular Trainer	MINI-EESF	4 Sets	$ 15,000	$ 61,050	Photovoltaic Solar Energy	Made in Spain	Alternative Energies
	Sub Total				$ **794,205**			
II. ELECTRONIC								
1	PLC Pneumatic System	Siemens/Festo	5 Sets	$ 4,500	$ 22,815	KEYENCE PLC KV-24R	JAPAN	training kit plc with phneumatic component
2	PLC Hydroric System	Siemens/Festo	5 Sets	$ 4,500	$ 22,815	KEYENCE PLC KV-16ARKV	JAPAN	training kit plc with hydraulic component
3	Solar System		2 Sets	$ 5,000	$ 10,350	150W; battery70A; converter.	JAPAN	training kit on solar system.
4	Wind System		2 Sets	$ 5,000	$ 10,350	250W;	JAPAN	training kit on wind generator system.
5	Microprocessor training System		5 Sets	$ 3,000	$ 15,210	nx-4i Digital circuit experiment board.	tailand	training boad on micropr- cessor.
6	Electronic Circuit Measurement System		5 Sets	$ 625	$ 3,170	PICSTART Plus development programer	tailand	training kit for PIC; for transfer program to chip (PIC).
7	PCB Fabrication System		2 Sets	$ 6,000	$ 12,420	Sodick : AQ 400 L	usa	PCB Training machine use to make circuit board.
	Sub Total				$ **97,130**			
III. CIVIL CONSTRUCTION								
1	Hydraulic Sero-Controlled Machine 600KN Capacity with Touch Screen Servo-Plus Evolution		1	$ 81,700	$ 81,700	600kN capacity, with Touch Screen Servo-Plus		To perform static tensile test on metallic

	Digital System to Perform Static Tensile Test on Metallic Materials							materials
2	ELectromagetic Sieve Shaker, Accept Sieve Dia. 200-315mm		1	$ 1,795	$ 1,795	230V 50Hz 1ph 450/750W		To perform sieving tests
3	Dynamic Cone Penetrater (DCP)	S051	1	$ 1,422	$ 1,422	N/A		To obtain a direct and rapid in-situ evaluation of the structural strength of road pavement layers
4	Consolidation		1	$ 2,220	$ 2,220	50 Kg of slotted weights		To use for one-dimensional consolidation test of a soil
5	Sand Equivalent Value		1	$ 664	$ 664	ASTM, AASHTO		To assess of fine aggregats
6	Specific Gravity Cement		1	$ 102	$ 102	N/A		To determine the relative density of hydraulic cement and lime
7	VICAT Apparatus		1	$ 2,857	$ 2,857	Automatic computerised vicat recording apparatus		To determine setting time and consistency of cement
8	Flow Table		1	$ 2,809	$ 2,809	ASTM		To use for flow and workability tests of mortar and lime
9	Cement Mould		1	$ 392	$ 392	ASTM		To mould mortar for cement test in finding its strength
10	Los Angeles Abrasion Machine		1	$ 4,559	$ 4,559	ASTM, AASHTO		To determine resistance to fragmentation
11	Electronic Digital Balance, Capacity 10Kg x 0.01g		1	$ 1,343	$ 1,343	10 Kg x 0.01 g		To measure weigth of materials
12	Levelling Machine		5	$ 367	$ 1,837	N/A		To use for profiling, lanscaping, area leveling, building and civil engineering
13	Digital Theodolite Builder 206		5	$ 6,226	$ 31,130	N/A		To use for setting out boards, line layout, findig volumes, checking and defining height transfer
14	Laser Level Instruments L2P5		5	$ 403	$ 2,013	N/A		To use for plumbing up and down, setting out right angles, horizontal leveling, vertical aligning, vertical and horizontal aligning, and aligning at an angle
15	Leica Total Station Flexline TS06		2	$ 12,225	$ 24,450	N/A		To use for surveyings
16	Digital Triaxial Machine 50KN		1	$ 20,032	$ 20,032	50KN capacity		To find profile of soils: unconfined,coslidatio n, and direct shear
17	Laptop Computers, Vostro 3450 (2nd Generation Intel) LD-953		5	$ 690	$ 3,450	Interl' Core'm i5-2430M (2.4GF0, 3MB cache) Ram: 4GB DDR3, HOD: 500GB SATA, 14" Windescreen HD		To use for teaching aid
18	LCD Projectors, SONY VPL-EX120		3	$ 790	$ 2,370	Lamp Life. 3000 Hours, Light Consum: 210 Watt, Power Consum: 290 Watt		To use for teaching aid
19	Concrete Test Hammer Equipment, Matest Model	C380	1	$ 284	$ 284	N/A		To perform non-destructive tests for getting immediate of compressive strength of concrete
20	Bulk Density of Cement	E025	1	$ 402	$ 402	N/A		To use for the measurement of the apparent density of powders and non-cohesive materials
21	Sand Equivalent (Simple Test)		1	$ 317	$ 317	ASTM, AA5HTC1		To assess of fine aggregats
22	Sand Equivalent Shaker Hand Operated	S161	1	$ 1,314	$ 1,314	N/A		To assess of fine aggregats
23	Sieves for Aggregate Flateness Index and Shape		1	$ 2,258	$ 2,258	N/A		To assess of coarse aggregats
24	Sieve for Aggregate Particle Size Analysis		1	$ 1,350	$ 1,350	N/A		To use for aggregate pasticle size analysis
25	Digital direct shear testing machine		1	$ 11,700	$ 11,700	N/A		to determine the resistance to shearing of all types of soil specimens both consolidated and drained, undisturbed or remoulded samples
	Subtotal				$ **202,769**			
	Grand Total				$ **1,094,104**			

Source:PPI

添付資料 13　Industrial Training Institute（ITI）整備要請機材リスト

List of Requested Equipment by ITI

No.	Equipment Name	Quan.	Unit Price	Amount USD $	Specification	Made in	Purpose of Usage
	METAL ENGINEERING						
1	Power Hacksaw	1	$2,980.00	$2,980.00	Model gate 912B	Malysia	Use for cutting steel bar to work pieces for student practice
2	Lath Machine	5	$24,500.00	$122,500.00	Model Compass 250/1500	Taiwan	Use for producing Gear, Cilander, Pistone and other tools vihecle and spearparts
3	Shaping Machine	2	$30,500.00	$61,000.00	Model SH18K	Taiwan	Use shaping plade, Cilander, gears etc..
4	Internal Micrometer	10	$86.00	$860.00			Used with a telescope or microscope, for measuring minute distances, or the apparent diameters of objects which subtend minute angles
5	Digital Caliper Rules	10	$108.00	$1,080.00			An instrument for measuring thickness of the internal or external diameter of something
6	Turntable Truck	2	$950.00	$1,900.00			Use for moving heavy materials or equipment in workshop
7	10 Drawers Roller Tool Cabinet	3	$816.00	$2,448.00	RC10 Stock 03091, Draper	UK	For keeping equipment and tools for student practice
SUB-TOTAL				**$192,768.00**			
	AIRCONDITIONING						
1	Airconditioner	10	$450.00	$4,500.00	Panasonic, 2 Hp	Malysia	Use for demonstration, model and practicing at workshop.
2	Refrigerater	10	$320.00	$3,200.00	Hitashi	Thailand	Use for demonstration, model and practicing at workshop.
3	Vacuum Pump	3	$140.00	$420.00	HJE-4071	USA	Use for cleaning machine and airconditioning.
4	Leak Detector	3	$139.00	$417.00	Siatic-TIF, Model 5650	USA	Use for leaking, a hole or crack, etc. through which liquid or gas may accidentally get in or out, the liquid or gas that passes through this, a disclosure of secret information, a crack, crevice, fissure, or hole in a vessel, the oozing of liquid from such, an escape of electrical current from a faulty conductor
5	Digital Manifold Gauge	5	$145.00	$725.00	Manu-TIF, Model 9590	Taiwan	Use for measure; a standard of measure; an instrument to determine dimensions, distance, or capacity; a standard
6	Digital Clam meter	5	$65.00	$325.00	Ca-Metrix,Model MX1200S	France	In electrical and electronic engineering, a current **clamp** or current probe is an electrical device having two jaws which open to allow **clamping**

							around an electrical
7	Digital Multimeter	5	$104.00	$520.00	Manu O-Megger, Model M5097	Taiwan	An instrument for measuring, and usually for recording automatically, the quantity measured.
8	10 Drawers Roller Tool Cabinet	3	$816.00	$2,448.00	RC10 Stock 03091, Draper	UK	For keping equipment for student practice
SUB-TOTAL				**$12,555.00**			
	AUTO ENGINEERING						
1	Osciloscopes	2	$1,145.00	$2,290.00	Manu CA-Metrix, Model OX8050	France	Teaching aid and student practice
2	Half front car (Selling in Cambodia market)	2	$7,500.00	$15,000.00	Toyota Camry 2002, 1MZ-FE	Japan	Use for demonstration, model and practicing at workshop.
3	Toyota Engine	5	$2,500.00	$12,500.00	Toyota Vigo 2KD-FIV	Japan	Use for demonstration, model and practicing at workshop.
4	ECU Toyota	5	$1,000.00	$5,000.00	Toyota Vigo 2KD-FIV	Japan	Teaching aid and student practice
5	OBD2 Scaner	2	$1,500.00	$3,000.00	X431 Launch	China	Teaching aid and student practice
6	Infrared	1	$520.00	$520.00	853608, Wurth	Germany	Use for charging battary during practicing at workshop
7	Battery Charger/Starter	1	$663.00	$663.00	BCS 600T, 12V/ 24/ 500A	UK	Use for charging battary during practicing at workshop
8	Battery Load tester 100A	2	$156.00	$312.00	BLT 100, Draper	UK	Use for testing battery
9	Trolley Jack 3 Tonnes	4	$519.00	$2,076.00	TJ3/HD-Long, Draper	UK	For lifting a car up
10	2 Tone Folding Engine crane	2	$1,985.00	$3,970.00	EC 1000, Draper	UK	For lifting a car engine
11	Digital Autoranging Automotive Ananlyzer	10	$159.00	$1,550.00	DM 14, Draper	UK	Use for analysing automotive
12	Air-Hose	4	$420.00	$1,680.00	1054, 6.3 Bar, Wurth	Germany	Use air compressor moter
13	10 Drawers Roller Tool Cabinet	5	$816.00	$4,080.00	RC10 Stock 03091, Draper	UK	For keeping equipment for student practice
SUB-TOTAL				**$52,641.00**			
1	Desktop computer, Dell	30	$700.00	$21,000.00	System Unit: RAM 4GB, CPU Core i5, Hard Disk 500GB, DVD Room 54x, Monitor LED 17"	China	Use for classroom teaching and practicing.
2	Server Dell Tower	2	$5,000.00	$10,000.00	System Unit: RAM 8GB, CPU Xerox , Hard Disk 8TB, DVD Room, Main Board	Taiwan	Use for Controling PC, and shared Internet
3	Laptop, Dell	3	$1,000.00	$3,000.00	RAM 8GB, CPU Core i7, Hard Disk 750GB, Main Board	China	Teaching aid
4	LCD Projector, Epson	3	$620.00	$1,860.00	Model H283C, L5NF96 1183L	China	Teaching aid
	Screen	3	$350.00	$1,050.00	100' x 100'	China	Teaching aid
SUB-TOTAL				**$36,910.00**			
GRANT TOTAL				**$294,874.00**			

添付資料 14　産業人材ニーズに関する調査票（製造業）

カンボジア国産業人材育成プログラム準備調査
産業人材ニーズに関する調査票
製造業の皆様

【記入上のお願い】

- 当調査は、カンボジア進出日系企業の産業人材のニーズを把握し、独立行政法人国際協力機構（JICA）による産業人材育成分野の協力プログラム及びプロジェクトの検討・形成に活用するためのものです。ご回答内容は、この目的以外に使用することはありません。また、回答者が特定されるような調査結果の公表はいたしません。
- 選択式の質問にご回答の際には、**該当する番号に下線をお引きください**。
- 当調査票は、**1月27日（金）**までに、当調査担当の小川いづみまでご返送ください。
- 当調査に関してご不明な点がございましたら、下記までお問い合わせください。

＜問い合わせ先＞
JICA「カンボジア国産業人材育成プログラム準備調査」　担当：小川いづみ
住所：77-E2, Icon Professional Building, 216 Norodom Blvd
Tonle Bassac, Chamkarmorn, Phnom Penh

I. 貴社の概要について

企業名：
所在地：
電話番号：　　FAX：
設立年：
ご回答者様のご氏名：
ご回答者様のご役職：
E メール：

問1　カンボジアにおける貴社の社員数をお教えください。
_____人

問2　カンボジアに製造拠点がありますか。

1　現在ある（____カ所）	3　ない
2　近い将来設置予定がある（____年）	

問3　貴社の主な製品は何ですか。

問4　カンボジアへ進出した理由は何ですか。該当する番号を全てお選びください。

1　カンボジア国内市場の開拓	6　原材料・部品の確保
2　生産拠点設立	7　有利な税制（投資優遇措置など）
3　海外事業リスク分散	8　取引先企業の海外移転
4　第三国への輸出	9　会社のブランド力向上
5　低廉な労働力の確保	10　その他（　　）

II. カンボジア人社員の数について

問1　カンボジア人社員の現在の人数及び近い将来（3 年後程度）の予定人数をお教えください。

		現在	近い将来
管理職	技術職	人	人
	その他	人	人
その他従業員	技術職	人	人
	その他	人	人

III. カンボジア人以外の社員の数について

問1　日本人社員の有無をお教えください。

1　常駐社員がいる（____人）	3　いない
2　非常駐社員がいる（____人）	

問2　第三国出身の管理職の人数とその出身国をお教えください。

管理職	技術職	タイ	人
		中国	人
		ベトナム	人
		その他（　　）	人
		その他（　　）	人
	その他	タイ	人
		中国	人
		ベトナム	人
		その他（　　）	人
		その他（　　）	人

IV. カンボジア人技術者（テクニシャン・エンジニア）の雇用の現状及び将来計画について

当調査では、テクニシャンは「**学士号未満の学位（高等専門学校のディプロマなど）を有する人材**」、エンジニアは「**工学系学士号を有する工学系高度人材**」を指すこととします。

問1　カンボジア人技術者（テクニシャン・エンジニア）の現在の人数及び近い将来（3 年後程度）の予定人数をお教えください。

	現在	近い将来
テクニシャン	人	人
エンジニア	人	人

問2　カンボジア人技術者の採用・実技研修に際し、特に重視する点は何ですか。該当する番号を<u>全て</u>お選びください。

1　学歴	5　即戦力
2　技術資格	6　英語力
3　ポテンシャル	7　日本語力
4　チームワーク	8　その他（　　）

問3　カンボジア人技術者に従事させたい業務過程は何ですか。

1　工程管理	4　調達購買
2　品質管理	5　製品出荷・在庫管理
3　開発設計	6　その他（　　）

問4　現在雇用しているカンボジア人技術者の求人・採用手段は何でしたか。該当する番号を全てお選びください。

1　学校	5　インターンシップ
2　国家雇用機構（NEA）	6　インターネット
3　民間紹介機関	7　知人・友人
4　カンボジア日本人材開発センター（CJCC）	8　その他（　　）

問5　カンボジア人技術者の雇用についての問題点は何ですか。

問6　カンボジア人技術者に対する満足度についてお教えください。

1　満足	4　やや不満
2　やや満足	5　不満
3　どちらともいえない	

問7　カンボジア人技術者について特記事項がございましたら、ご記入ください。

V. 教育訓練機関への期待について

カンボジアには、工学系の産業人材を輩出しうる、以下のような公的教育訓練機関があります。

- カンボジア工科大学
- バッタンバン大学
- ミンチェイ大学
- スバイリエン大学
- ノートン大学
- Preah Kossomak Polytechnic Institute (PPI)
- National Technical Training Institute (NTTI)
- National Polytechnic Institute of Cambodia (NPIC)
- Industrial Technical Institute (ITI)
- Polytechnic Institute of Battambang Province (PIB)
- Battambang Institute of Technology (BIT)
- Kampot Institute of Polytechnic (KIP)

問1　教育訓練機関の現在の教育に対する満足度と、不満の場合にはその理由をお教えください。

満足度	1　満足　　3　やや不満　　5　教育訓練機関については不明 2　ほぼ満足　　4　不満
理由 （「3 やや不満」または「4 不満」とお答えの方、該当する番号を全てお選びください。）	1　十分な質のテクニシャンを育成できていない 2　十分な数のテクニシャンを育成できていない 3　十分な質のエンジニアを育成できていない 4　十分な数のエンジニアを育成できていない 5　教育訓練内容がニーズと合っていない 6　施設・設備・資材が老朽化・不足している 7　技術実習が少ない 8　客観的に知識・技能を判定する資格制度が確立されていない 9　その他（　　）

問2　教育訓練機関に期待することは何ですか。該当する番号を全てお選びください。

1　理論教育にもっと力を入れてほしい
2　技術実習にもっと力を入れてほしい
3　短期コースを実施してほしい
4　夜間コースを実施してほしい
5　日本語教育にもっと力を入れてほしい
6　英語教育にもっと力を入れてほしい
7　企業のニーズをくみ取る制度をつくってほしい
8　就職支援を行ってほしい
9　その他（　　）

ご協力ありがとうございました

添付資料 15　産業人材ニーズに関する調査票（建設業）

カンボジア国産業人材育成プログラム準備調査
産業人材ニーズに関する調査票
建設業・エンジニアリングの皆様

【記入上のお願い】

- 当調査は、カンボジア進出日系企業の産業人材のニーズを把握し、独立行政法人国際協力機構（JICA）による産業人材育成分野の協力プログラム及びプロジェクトの検討・形成に活用するためのものです。ご回答内容は、この目的以外に使用することはありません。また、回答者が特定されるような調査結果の公表はいたしません。
- 選択式の質問にご回答の際には、**該当する番号に下線をお引きください**。
- 当調査票は、**1月27日（金）**までに、当調査担当の小川いづみまでご返送ください。
- 当調査に関してご不明な点がございましたら、下記までお問い合わせください。

＜問い合わせ先＞
JICA「カンボジア国産業人材育成プログラム準備調査」　担当：小川いづみ
住所：77-E2, Icon Professional Building, 216 Norodom Blvd
Tonle Bassac, Chamkarmorn, Phnom Penh

I. 貴社の概要について

企業名：
所在地：
電話番号：　　FAX：
設立年：
ご回答者様のご氏名：
ご回答者様のご役職：
E メール：

問1　カンボジアにおける貴社の社員数をお教えください。
_____人

問2　カンボジアに建設拠点がありますか。

1　現在ある（____カ所）	3　ない
2　近い将来設置予定がある（____年）	

問3　貴社の主な建造物は何ですか。

問4　カンボジアへ進出した理由は何ですか。該当する番号を全てお選びください。

1　カンボジア国内市場の開拓	6　原材料・部品の確保
2　生産拠点設立	7　有利な税制（投資優遇措置など）
3　海外事業リスク分散	8　取引先企業の海外移転
4　第三国への輸出	9　会社のブランド力向上
5　低廉な労働力の確保	10　その他（　　）

以下の質問項目は、製造業を念頭に置いたものです。回答不可能、或いはサブコントラクターの雇用が殆どの場合は、「V. サブコントラクターについて」に進んでご回答下さい。

II. カンボジア人社員の数について

問1　カンボジア人社員の現在の人数及び近い将来（3 年後程度）の予定人数をお教えください。

		現在	近い将来
管理職	技術職	人	人
	その他	人	人
その他従業員	技術職	人	人
	その他	人	人

III. カンボジア人以外の社員の数について

問1　日本人社員の有無をお教えください。

1　常駐社員がいる（____人）	3　いない
2　非常駐社員がいる（____人）	

問2　第三国出身の管理職の人数とその出身国をお教えください。

管理職	技術職	タイ	人
		中国	人
		ベトナム	人
		その他（　　）	人
		その他（　　）	人
	その他	タイ	人
		中国	人
		ベトナム	人
		その他（　　）	人
		その他（　　）	人

IV. カンボジア人技術者（テクニシャン・エンジニア）の雇用の現状及び将来計画について

当調査では、テクニシャンは「**学士号未満の学位（高等専門学校のディプロマなど）を有する人材**」、エンジニアは「**工学系学士号を有する工学系高度人材**」を指すこととします。

問1　カンボジア人技術者（テクニシャン・エンジニア）の現在の人数及び近い将来（3 年後程度）の予定人数をお教えください。

	現在	近い将来
テクニシャン	人	人
エンジニア	人	人

問2　カンボジア人技術者の採用・実技研修に際し、特に重視する点は何ですか。該当する番号を<u>全て</u>お選びください。

1　学歴	5　即戦力
2　技術資格	6　英語力
3　ポテンシャル	7　日本語力
4　チームワーク	8　その他（　　）

問3　カンボジア人技術者に従事させたい業務過程は何ですか。

1　工程管理	4　調達購買
2　品質管理	5　製品出荷・在庫管理
3　開発設計	6　その他（　　）

問4　現在雇用しているカンボジア人技術者の求人・採用手段は何でしたか。該当する番号を<u>全て</u>お選びください。

1　学校	5　インターンシップ
2　国家雇用機構（NEA）	6　インターネット
3　民間紹介機関	7　知人・友人
4　カンボジア日本人材開発センター（CJCC）	8　その他（　　）

問5　カンボジア人技術者の雇用についての問題点は何ですか。

問6　カンボジア人技術者に対する満足度についてお教えください。

1　満足	4　やや不満
2　やや満足	5　不満
3　どちらともいえない	

問7　カンボジア人技術者について特記事項がございましたら、ご記入ください。

V. サブコントラクターについて

業務の形態が、主にサブコントラクターを使っておられる場合、直接契約されているサブコントラクターについて、ご存じの範囲内でお答えください。（複数社の場合は、概要で結構です。）

問1　サブコントラクターの中に、どのような分野の技術者がいますか。

1　土木（____人）	4　測量（____人）
2　建築（____人）	5　その他（____人）
3　電気（____人）	

問2　技術者は、主に施工管理を分担されていると思いますが、施工管理能力についての満足度をお教えください。

1　満足	4　不満
2　やや満足	5　施工管理能力については不明
3　やや不満	

問3　施工管理をする上での課題は何ですか。該当する番号を<u>全て</u>お選びください。

1　知識	5　注意力
2　管理技能	6　リーダーシップ
3　工程管理	7　その他（　　）
4　コミュニケーション	

VI. カンボジア籍のサブコントラクターについて

問1　カンボジア籍のサブコントラクターの現在の契約社数及び近い将来（3 年後程度）の契約予定社数についてお教えください。

	現在	近い将来
サブコントラクターの数	社	社

VII.　サブコントラクターのカンボジア人以外の社員の数について

問1　サブコントラクターの日本人社員の有無をお教えください。

1　常駐社員がいる（____人）	3　いない
2　非常駐社員がいる（____人）	

問2　サブコントラクターが第三国出身の人を雇っている場合、その国別人数をご存じの範囲内でお教えください。

管理職	技術職	タイ	人
		中国	人
		ベトナム	人
		その他（　　）	人
		その他（　　）	人
	その他	タイ	人
		中国	人
		ベトナム	人
		その他（　　）	人
		その他（　　）	人

VIII.　サブコントラクターが雇っているカンボジア人技術者（テクニシャン・エンジニア）の雇用の現状及び将来計画について（ご存じの範囲内でお答えください。）

当調査では、テクニシャンは「**学士号未満の学位（高等専門学校のディプロマなど）を有する人材**」、エンジニアは「**工学系学士号を有する工学系高度人材**」を指すこととします。

問1　サブコントラクターが雇っているカンボジア人技術者（テクニシャン・エンジニア）の現在の人数及び近い将来（3 年後程度）の予定人数をお教えください。

	現在	近い将来
テクニシャン	人	人
エンジニア	人	人

問2　サブコントラクターのカンボジア人技術者の雇用についての問題点は何ですか。

.....

.....

問3　サブコントラクターが雇っているカンボジア人技術者に対する満足度についてお教えください。

1　満足	4　やや不満
2　やや満足	5　不満
3　どちらともいえない	

問4　サブコントラクターのカンボジア人技術者の雇用について特記事項がございましたら、ご記入ください。

.....

.....

IX. 教育訓練機関への期待について

カンボジアには、工学系の産業人材を輩出しうる、以下のような公的教育訓練機関があります。

- カンボジア工科大学
- バッタンバン大学
- ミンチェイ大学
- スバイリエン大学
- ノートン大学
- Preah Kossomak Polytechnic Institute (PPI)
- National Technical Training Institute (NTTI)
- National Polytechnic Institute of Cambodia (NPIC)
- Industrial Technical Institute (ITI)
- Polytechnic Institute of Battambang Province (PIB)
- Battambang Institute of Technology (BIT)
- Kampot Institute of Polytechnic (KIP)

問1　教育訓練機関の現在の教育に対する満足度と、不満の場合にはその理由をお教えください。

満足度	1　満足　　3　やや不満　　5　教育訓練機関については不明 2　ほぼ満足　　4　不満
理由 （「3 やや不満」または「4 不満」とお答えの方、該当する番号を全てお選びください。）	1　十分な質のテクニシャンを育成できていない 2　十分な数のテクニシャンを育成できていない 3　十分な質のエンジニアを育成できていない 4　十分な数のエンジニアを育成できていない 5　教育訓練内容がニーズと合っていない 6　施設・設備・資材が老朽化・不足している 7　技術実習が少ない 8　客観的に知識・技能を判定する資格制度が確立されていない 9　その他（　　）

問2　教育訓練機関に期待することは何ですか。該当する番号を全てお選びください。

1　理論教育にもっと力を入れてほしい
2　技術実習にもっと力を入れてほしい
3　短期コースを実施してほしい
4　夜間コースを実施してほしい
5　日本語教育にもっと力を入れてほしい
6　英語教育にもっと力を入れてほしい
7　企業のニーズをくみ取る制度をつくってほしい
8　就職支援を行ってほしい
9　その他（　　）

ご協力ありがとうございました