



Faculty of  
Engineering  
**UPNM**

National Defence University of Malaysia  
Kewajipan • Maruah • Integriti

# Undergraduate Programmes Offered

**ZK01**  
Bachelor of  
Civil Engineering

**ZK08**  
Bachelor of  
Mechanical  
Engineering

**ZK23**  
Bachelor of  
Electrical and  
Electronics Engineering  
with Honours

**ZK61**  
Bachelor of  
Aviation



**COURSE STRUCTURE AND TOTAL CREDIT REQUIREMENT FOR THE PROGRAM  
BACHELOR OF CIVIL ENGINEERING (ZK01)**

Total credit required to fulfill for graduation are listed in table below. The duration of study to be completed are 8 semesters. Courses need to be taken are described in the section as below.

COURSES	CREDIT
<b>University Course:</b>	
i. University Core	24
ii. University Elective	6
<b>Program Core Course:</b>	
i. Program	81
ii. Faculty	20
<b>Program Elective Course (Technical Specialization)</b>	9
<b>TOTAL CREDIT FOR GRADUATION</b>	<b>140</b>

**PROGRAM CORE COURSE  
BACHELOR OF CIVIL ENGINEERING PROGRAM (ZK01)**

**LIST OF PROGRAM CORE COURSE (90 CREDITS):**

CODE	COURSE	CREDIT	PRE-REQUISITE CODE	STATUS
ECC 3313	Applied Mechanics	3	-	
ECC 3323	Construction Materials and Technology	3	-	
ECC 3333	Mechanics of Materials	3	ECC3313	MP
ECC 3343	Fluid Mechanics	3	-	
ECC 3402	Engineering Geology	2	-	
ECC 3413	Mechanics of Structures	3	ECC3333	MP
ECC 3423	Engineering Hydrology	3	-	
ECC 3432	Graphics and Engineering Drawings	2	-	
ECC 3443	Structural Analysis	3	ECC3413	MT
ECC 3453	Water Supply and Sewerage	3	-	
ECC 3463	Soil Mechanics	3	-	
ECC 3473	Geomatics	3	-	
ECC 3503	Reinforced Concrete Design I	3	ECC3413	MP
ECC 3513	Geotechnics	3	ECC3463	MT
ECC 3523	Highway Engineering	3	-	
ECC 3532	Civil Engineering Project Management	2	-	
ECC 3543	Reinforced Concrete Design II	3	ECC3503	MT
ECC 3553	Hydraulics	3	ECC3343	MT
ECC 3563	Foundation Engineering	3	ECC3513	MT
ECC 3573	Transportation Engineering	3	-	
ECC 3584	Industrial Training	4	-	
ECC 3603	Steel and Timber Structures Design	3	ECC3413	MT
ECC 3613	Environmental Engineering	3	-	
ECC 3622	Infrastructure Design Project (Capstone I)	2	-	
ECC 3632	Final Year Project I	2	-	
ECC 3642	Engineers in Society	2	-	

ECC 3652	Engineering Contract, Estimation and Economics	2	-	
ECC 3662	Structural Design Project (Capstone II)	2	ECC3543 / ECC3603	MT
ECC 3674	Final Year Project II	4	ECC3632	MP

Note: MP – Must Pass; MT – Must Taken

**PROGRAM ELECTIVE COURSE (TECHNICAL SPECIALIZATION)  
BACHELOR OF CIVIL ENGINEERING PROGRAM (ZK01)**

**LIST OF PROGRAM ELECTIVE COURSE (TECHNICAL SPECIALIZATION) COURSE  
(9 CREDITS):**

<b>CODE</b>	<b>COURSE</b>	<b>CREDIT</b>	<b>PRE-REQUISITE</b>
ECC 3713	Nuclear, Biological and Chemical Contamination	3	-
ECC 3723	Ground Improvement	3	-
ECC 3733	Advanced Highway Engineering	3	-
ECC 3743	Advanced Construction Materials and Technology for Military Application	3	-
ECC 3753	Structure Subject to Blast	3	-
ECC 3763	Integrated Water Resources Management	3	-
ECC 3773	Environmental Hydraulics and Hydrology	3	-
ECC 3783	Introduction to Railways and Tunnels	3	-
ECC 3793	Damage Assessment, Repair and Maintenance of Concrete Structures	3	-
ECC 3803	Introduction to Bridge Engineering	3	-
ECC 3813	Hydrologic Analysis and Design	3	-

**CURRICULUM STRUCTURE  
BACHELOR OF CIVIL ENGINEERING PROGRAM (ZK01)**

FIRST YEAR							
SEMESTER 1				SEMESTER 2			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
<b>UNIVERSITY CORE COURSE</b>							
DUS 3012	Military History	2	-	MPU 3132	Appreciation of Ethics and Civilisations	2	-
MPU 3142	Philosophy and Current Issues	2	-				
LLE 3012	English for Academic Writing	2	-	DUM 3022	Military Leadership	2	-
<b>UNIVERSITY ELECTIVE COURSE</b>							
QK 3XX2/ PLS 3111	Co-curriculum / PALAPES**	2/1**		QK 3XX2/ ALK3112/ PLS3121	Co-curriculum / General Military Training*/ PALAPES**	2/2*/1**	-
<b>FACULTY CORE COURSE</b>							
EFA 3253	Engineering Mathematics I (Calculus III)	3	-	EFA 3213	Engineering Mathematics II (Differential Equation)	3	-
				EFC 3223	Computing I (C and C++)	3	-
<b>PROGRAM CORE COURSE</b>							
ECC 3313	Applied Mechanics	3	-	ECC 3333	Mechanics of Materials	3	+ECC 3313
Lama ECC 3323	Construction Materials and Technology	3	-	ECC 3343	Fluid Mechanics	3	-
EFB 3212	Introduction to Engineering (IR 4.0)	2	-				
<b>TOTAL</b>		<b>19/17*/ 18**</b>		<b>TOTAL</b>		<b>18/18*/ 17**</b>	

Civillian Student

\* Cadet Officer

\*\* PALAPES

+ Must Pass

# Must Taken

SECOND YEAR							
SEMESTER 3				SEMESTER 4			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
<b>UNIVERSITY CORE COURSE</b>							
LLF3XX1	Foreign Language I	1	-	LLF3XX1	Foreign Language II	1	-
LLA3XX1	Foreign Language I	Audit	-	LLA 3XX1	Foreign Language II	Audit	-
MPU3412 or MPU 3422	Human Movement Science or Community Service	2	-				
DUS 3022	Introduction to Strategic Studies	2	-	MPU3312 or MPU 3332	Nationhood in World Politics or Fiqh Keutamaan	2	-
DUS 3032	Military Law and Laws of Armed Conflict	2	-	LLE 3032	Al – Ghazali Dialogue : English Communication	2	-
<b>UNIVERSITY ELECTIVE COURSE</b>							
QK 3XX2/ ALK3122/ PLS3131	Co-curriculum / General Military Training*/ PALAPES**	2/2*/1**	-	QKS 3172/ PLS 3141	Unarmed Combat* / PALAPES**	2*/1**	
<b>PROGRAM CORE COURSE</b>							
ECC 3402	Engineering Geology	2	-	ECC 3443	Structural Analysis	3	# ECC 3413
ECC 3413	Mechanics of Structures	3	+ECC 3333	ECC 3453	Water Supply and Sewerage	3	-
ECC 3423	Engineering Hydrology	3	-	ECC 3463	Soil Mechanics	3	-
~ ECC 3432	Graphics and Engineering Drawings	2	-	~ ECC 3473	Geomatics	3	-
<b>TOTAL</b>		<b>19/19*/ 18**</b>		<b>TOTAL</b>		<b>17/19*/16**</b>	

Civillian Student

\* Cadet Officer

\*\* PALAPES

~ Offered in both semester

+ Must Pass

# Must Taken

THIRD YEAR							
SEMESTER 5				SEMESTER 6			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
<b>UNIVERSITY CORE COURSE</b>							
MPU 3212	Basic Entrepreneurship	2	-				
<b>UNIVERSITY ELECTIVE COURSE</b>							
PLS 3151	PALAPES**	1**	-	PLS 3161	PALAPES**	1**	-
<b>FACULTY CORE COURSE</b>							
EFA 3223	Engineering Mathematics IV (Statistics)	3	-	EFA 3243	Engineering Mathematics IIIB (Operations Research and Computer Information Systems)	3	-
<b>PROGRAM CORE COURSE</b>							
ECC 3503	Reinforced Concrete Design I	3	+ ECC 3413	ECC 3543	Reinforced Concrete Design II	3	# ECC 3503
ECC 3513	Geotechnics	3	# ECC 3463	ECC 3532	Civil Engineering Project Management	2	-
ECC 3523	Highway Engineering	3	-	ECC 3563	Foundation Engineering	3	# ECC 3513
ECC 3553	Hydraulics	3	# ECC 3343	ECC 3573	Transportation Engineering	3	-
				ECC 3XX3	Technical Specialization I	3	-
<b>TOTAL</b>		<b>17/18*/18**</b>		<b>TOTAL</b>		<b>17/18*/18**</b>	

- Civillian Student
- \* Cadet Officer
- \*\* PALAPES
- + Must Pass
- # Must Taken

THIRD YEAR			
INTER – SESSION			
CODE	COURSE	CREDIT	PRE-REQUISITE
ECC 3584	Industrial Training	4	Passed 60 credit hours
<b>TOTAL</b>		<b>4</b>	

FOURTH YEAR							
SEMESTER 7				SEMESTER 8			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
<b>FACULTY CORE COURSE</b>							
EFC 3213	Computing II (Numerical Methods and Engineering Softwares)	3	-				
<b>PROGRAM CORE COURSE</b>							
ECC 3603	Steel and Timber Structures Design	3	# ECC 3413	ECC 3642	Engineers in Society	2	-
ECC 3613	Environmental Engineering	3	-	ECC 3652	Engineering Contract, Estimation and Economics	2	-
ECC 3622	Infrastructure Design Project (Capstone I)	2	-	ECC 3662	Structural Design Project (Capstone II)	2	# ECC 3543 or # ECC 3603
ECC 3632	Final Year Project I	2	Passed 80 credit hours	ECC 3674	Final Year Project II	4	+ ECC 3632
<b>PROGRAM ELECTIVE COURSE</b>							
ECC 3XX3	Technical Specialization II	3	-	ECC 3XX3	Technical Specialization III	3	-
<b>TOTAL</b>		<b>16/16*/16**</b>		<b>TOTAL</b>		<b>13/13*/13**</b>	

Civillian Student

\* Cadet Officer

\*\* PALAPES

+ Must Pass

# Must Taken

**PROGRAM COURSE STRUCTURE AND TOTAL CREDIT REQUIREMENT  
BACHELOR OF MECHANICAL ENGINEERING (ZK08)**

Total credit required for graduation is listed in table below. The duration of study to be completed is long 8 semesters and 1 short semester. Courses need to be taken are described in the following section.

COURSE	CREDIT
<b>University Courses:</b>	
i. University Core	24
ii. University Elective	6
<b>Program Core Courses:</b>	
i. Program Core	81
ii. Faculty Core	20
<b>Program Elective Course (Technical Specialization)</b>	9
<b>TOTAL CREDIT FOR GRADUATION</b>	<b>140</b>

**PROGRAM CORE COURSES  
BACHELOR OF MECHANICAL ENGINEERING (ZK08)**

CODE	COURSE	CREDIT	PRE-REQUISITE	PRE-STATUS
EMM 3313	Engineering Mechanics (Statics)	3		
EMM 3323	Dynamics	3	EMM 3313	MP
EMM 3463	Materials Engineering	3		
EMM 3423	Strength of Materials I	3	EMM 3313	MP
EMM 3433	Strength of Materials II	3	EMM 3423	MP
EMM 3533	Mechanics of Machines	3	EMM 3323	MP
EMM 3543	Vibration	3	EMM 3323	MT
EMM 3443	Thermodynamics I	3		
EMM 3513	Thermodynamics II	3	EMM 3443	MP
EMM 3593	Heat Transfer	3	EMM 3513	MT
EMM 3453	Fluid Mechanics I	3		
EMM 3523	Fluid Mechanics II	3	EMM 3453	MP
EMM 3623	Computer Aided Engineering (CAE)	3		
EEE 3352	Introduction to Electrical Engineering	2		
EEE 3362	Electronics	2		
EMM 3552	Instrumentation	2		
EMM 3563	Control Engineering	3	EMM 3323 EEE 3362 EFA 3213	MT MT MT
EMM 3333	Mechanical Engineering Drawing	3		
EMM 3573	Mechanical Engineering Design	3	EMM 3433 EMM 3533	MT MT
EML 3512	Mechanical Engineering Laboratories	2		
EML 3522	Advanced Mechanical Engineering Laboratories	2	EML 3512	MT
EMM 3633	Capstone Project	3	EMM 3573	MT
EMM 3341	Workshop Practice	1		
EMM 3583	Manufacturing Technology	3		



EMM 3594	Industrial Training	4		
EMM 3642	Engineering Management	2		
EMM 3652	Engineers in Society	2		
EMM 3662	Operations Management	2		
EMT 3612	Final Year Project I	2	EMM 3433 EMM 3513 EMM 3523 EMM 3533 EMM 3573	MT MT MT MT MT
EMT 3624	Final Year Project II	4	EMT 3612	MP

Note: MP – Must Pass; MT – Must Taken

### PROGRAM ELECTIVE COURSES (TECHNICAL SPECIALIZATION)

CODE	COURSE	CREDIT
EME 3713	Composite Materials	3
EME 3723	System, Structure and Dynamics of Ground Vehicles	3
EME 3733	Turbomachinery	3
EME 3743	Non-Destructive Testing	3
EME 3753	Air-Conditioning & Refrigeration	3
EME 3763	Energy Efficient Buildings	3
EME 3773	Aerodynamics	3
EME 3783	Combustion	3
EME 3793	Turbocharging	3
EME 3803	Machine Learning and Artificial Intelligence	3

**PROGRAM CURRICULUM STRUCTURE  
BACHELOR OF MECHANICAL ENGINEERING (ZK08)**

FIRST YEAR							
SEMESTER 1				SEMESTER 2			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
University Core Courses							
DUS 3012	Military History	2	-	MPU 3132	Appreciation of Ethics and Civilisation	2	-
MPU 3142	Philosophy and Current Issues	2	-	DUM 3022	Military Leadership	2	-
LLE 3012	English for Academic Writing	2	-				
University Elective Courses							
PLS 3111	PALAPES **	1**	-	QKX 3XX2 / ALK 3112 / PLS 3121	Co-Curriculum / General Military Training 1* / PALAPES **	2 / 2* / 1**	-
Faculty Core Courses							
EFA 3253	Engineering Mathematics I (Calculus III)	3	-	EFA 3213	Engineering Mathematics II (Differential Equation)	3	-
EFB 3212	Introduction to Engineering	2	-				
Program Core Courses							
EEE 3352	Introduction to Electrical Engineering	2	-	EEE 3362	Electronics	2	-
EMM 3341	Workshop Practice	1	-	EMM 3333	Mechanical Engineering Drawing	3	-
EMM 3313	Engineering Mechanics (Statics)	3	-	EMM 3323	Dynamics	3	+EMM 3313
<b>TOTAL</b>		<b>17/17* / 18**</b>		<b>TOTAL</b>		<b>17/17* / 16**</b>	

- Civillian Student
- \* Cadet Officer
- \*\* PALAPES
- + Must Pass
- # Must Taken

SECOND YEAR							
SEMESTER 3				SEMESTER 4			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
University Core Courses							
DUS 3022	Introduction to Strategic Studies	2	-	MPU 3312	Nationhood in World Politics	2	-
				LLE 3032	Al-Ghazali's Dialogue: English Communication	2	-
University Elective Courses							
QKX 3XX2 / ALK 3122 / PLS 3131	Co-Curriculum / General Military Training 2 * / PALAPES **	2 / 2* / 1**	-	QKS 3172/ PLS 3141	Unarmed Combat*/ PALAPES **	2*/1**	-
Faculty Core Courses							
EFA 3233	Engineering Mathematics III (Complex Variable and Vector)	3	-	EFA 3223	Engineering Mathematics IV (Statistics)	3	-
EFC 3223	Computing I (C and C++)	3	-	EFC 3213	Computing II (Numerical Methods and Engineering Software)	3	-
Program Core Courses							
EMM 3423	Strength of Materials I	3	+EMM 3313	EMM 3433	Strength of Materials II	3	+EMM 3423
EMM 3443	Thermodynamics I	3	-	EMM 3453	Fluid Mechanics I	3	-
EMM 3463	Materials Engineering	3	-				
<b>TOTAL</b>		<b>19/19*/ 18**</b>		<b>TOTAL</b>		<b>16/18*/ 17**</b>	

Civillian Student

\* Cadet Officers

\*\* PALAPES

+ Must pass

# Must taken

THIRD YEAR							
SEMESTER 5				SEMESTER 6			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
University Core Courses							
LLF 3XX1	Foreign Language I	1	-	LLF 3XX1	Foreign Language II	1	-
LLA 3XX1	Foreign Language I	Audit	-	LLA 3XX1	Foreign Language II	Audit	-
MPU 3412 or MPU 3422	Human Movement Science or Community Service	2	-				
University Elective Courses							
QKX 3XX2 / PLS 3151	Co-Curriculum / PALAPES **	2 / 1**	-	PLS 3161	PALAPES **	1**	-
Program Core Courses							
EML 3512	Mechanical Engineering Laboratories	2	-	EML 3522	Advanced Mechanical Engineering Laboratories	2	#EML 3512
EMM 3583	Manufacturing Technology	3	-	EMM 3573	Mechanical Engineering Design	3	#EMM 3433 #EMM 3533
EMM 3513	Thermodynamics II	3	+EMM 3443	EMM 3593	Heat Transfer	3	#EMM 3513
EMM 3523	Fluid Mechanics II	3	+EMM 3453	EMM 3563	Control Engineering	3	#EMM 3323 #EEE 3362 #EFA 3213
EMM 3533	Mechanics of Machines	3	+EMM 3323	EMM 3543	Vibration	3	#EMM 3323
				EMM 3552	Instrumentation	2	-
<b>TOTAL</b>		<b>19/17*/18**</b>		<b>TOTAL</b>		<b>17/17*/18**</b>	

- Civillian Student
- \* Cadet Officer
- \*\* PALAPES
- + Must Pass
- # Must Taken

THIRD YEAR			
INTER – SESSION			
CODE	COURSE	CREDIT	PRE-REQUISITE
EMM 3594	Industrial Training	4	Passed 60 credit hours
<b>TOTAL</b>		<b>4</b>	

FOURTH YEAR							
SEMESTER 7				SEMESTER 8			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
University Core Courses							
DUS 3032	Military Law and Laws of Armed Conflict	2	-	MPU 3212	Basic Entrepreneurship	2	-
Program Core Courses							
EMT 3612	Final Year Project I	2	#EMM 3433 #EMM 3513 #EMM 3523 #EMM 3533 #EMM 3573	EMT 3624	Final Year Project II	4	+EMT 3612
EMM 3633	Capstone Project	3	+EMM 3573	EMM 3652	Engineers in Society	2	-
EMM 3662	Operations Management	2	-	EMM 3642	Engineering Management	2	-
EMM 3623	Computer Aided Engineering	3	-				
Program Elective Courses							
EME 3XX3	Elective I	3	-	EME 3XX3	Elective II	3	-
				EME 3XX3	Elective III	3	-
<b>TOTAL</b>		<b>15</b>		<b>TOTAL</b>		<b>16</b>	

Civillian Student

\* Cadet Officer

\*\* PALAPES

+ Must Pass

# Must Taken

**COURSE STRUCTURE AND TOTAL CREDIT REQUIREMENT FOR THE PROGRAM OF  
BACHELOR OF ELECTRICAL AND ELECTRONICS ENGINEERING WITH HONOURS  
(ZK23)**

The total credit required for graduation is 140 credits and to be completed in eight (8) normal semesters. The course credit breakdown is as follows:

COURSE	CREDIT
<b>University Course:</b>	
i. Core	24
ii. Elective	6
<b>Program Core Courses:</b>	
i. Faculty	20
ii. Program	78
<b>Program Elective Courses (Technical Specialization)</b>	12
<b>TOTAL CREDIT FOR GRADUATION</b>	<b>140</b>

**PROGRAM CORE COURSES**

List of Program Core Courses (78 Credits):

CODE	COURSES	CREDIT	PRE-REQUISITE CODE	STATUS
EEE 3323	Circuit Analysis I	3	-	
EEE 3313	Digital Electronics	3	-	
EEE 3333	Circuit Analysis II	3	EEE 3323	MT
EEE 3433	Analog Electronics & Devices	3	EEE 3333	MT
EEE 3423	Microprocessor & Microcomputer	3	EEE 3313	MT
EEE 3463	Signals & Systems	3	EEE 3333	MT
EEE 3443	Analog Circuits and Systems	3	EEE 3433	MT
EEE 3513	Principles of Communication	3	EEE 3463	MT
EEE 3483	Instrumentation and Control Engineering	3	EEE 3463	MT
EEE 3583	Power Electronics	3	-	
EEE 3473	Digital Systems	3	EEE 3313	MT
EEE 3553	Power Systems	3	EEE 3333	MT
EEE 3523	Electromagnetic Fields and Waves	3	EFA 3233	MT
EEE 3503	Electrical Machines and Drives	3	EEE 3583	MP
EEE 3593	Electrical Power Generation and High Voltage Engineering	3	EEE 3553	MP
EEE 3643	Electronic Drives and Applications	3	EEE 3503	MT
EEE 3623	Engineering Management	3	-	
EEE 3633	Engineers in Society	3	-	
EEE 3653	Electrical Energy Utilization	3	EEE 3553	MT
EEE 3574	Industrial Training	4	Passed 60 credit hours	
EEE 3311	Engineering Lab I	1	-	

EEE 3321	Engineering Lab II	1	EEE 3311	MT
EEE 3331	Engineering Lab III	1	EEE 3321	MT
EEE 3341	Engineering Lab IV	1	EEE 3331	MT
EEE 3351	Engineering Lab V	1	EEE 3341	MT
EEE 3361	Engineering Lab VI	1	EEE 3351	MT
EEE 3562	Capstone I	2	EEE 3433 EEE 3423	MT
EEE 3573	Capstone II	3	EEE 3562	MP
EEE 3602	Final Year Project I	2	EEE 3573	MT
EEE 3614	Final Year Project II	4	EEE 3602	MP

Note: MP – Must Pass; MT – Must Taken

### PROGRAM ELECTIVE COURSES (TECHNICAL SPECIALIZATION)

List of Program Elective Courses (Technical Specialization)– Track Power (12 Credits):

CODE	COURSES	CREDIT	PRE-REQUISITE	
			CODE	STATUS
EEP 3703	Advanced Power Systems	3	-	
EEP 3713	Renewable Energy	3	-	
EEP 3723	Power System Economics	3	-	
EEP 3733	Power System Protection	3	-	
EEP 3743	Electrical Condition Monitoring	3	-	
EEP 3753	Photovoltaic System & Applications	3	-	

List of Program Elective Courses (Technical Specialization) – Track Communication (12 Credits):

CODE	COURSES	CREDIT	PRE-REQUISITE	
			CODE	STATUS
EET 3503	Digital Communications	3	-	
EET 3613	Digital Signal Processing and Applications	3	-	
EET 3623	Antenna and Radio Propagation	3	-	
EET 3633	Data Communication & Multimedia Systems	3	-	
EET 3703	Wireless and Satellite Communications	3	-	
EET 3713	Antenna Engineering	3	-	
EET 3723	Microwave Engineering	3	-	
EET 3733	Introduction to Radar	3	-	
EET 3743	Optical Communication Systems	3	-	

List of Program Elective Courses (Technical Specialization) – Track Computer (12 Credits):

CODE	COURSES	CREDIT	PRE-REQUISITE	
			CODE	STATUS
EEC 3513	Computer Architecture & Organization	3	-	
EEC 3703	ASIC Design	3	-	
EEC 3713	Introduction to VLSI Design	3	-	
EEC 3723	Embedded System	3	-	
EEC 3733	Software Design and Implementation	3	-	
EEC 3743	Computer Security	3	-	
EEC 3753	Artificial Intelligence	3	-	

List of Program Elective Courses (Technical Specialization) – Track Nanotechnology (12 Credits):

CODE	COURSES	CREDIT	PRE-REQUISITE	
			CODE	STATUS
EEN 3703	Solid-State Electronic Devices	3	-	
EEN 3713	Nanoelectronic Device Fabrication and Characterization	3	-	
EEN 3723	Electronic Materials	3	-	
EEN 3733	Nanotechnology and Applications	3	-	
EEN 3743	Microelectronics Reliability & Failure Analysis	3	-	

List of Program Elective Courses (Technical Specialization) – Track Bioinstrumentation (12 Credits):

CODE	COURSES	CREDIT	PRE-REQUISITE	
			CODE	STATUS
EEB 3703	Biomedical Instrumentation	3	-	
EEB 3713	Biomedical Image Processing	3	-	
EEB 3723	Cell, Biomaterial, and Tissue Engineering	3	-	
EEB 3733	Artificial Intelligent and Machine Learning	3	-	
EEB3743	Optoelectronic	3	-	



**CURRICULUM STRUCTURE**  
**BACHELOR OF ELECTRICAL AND ELECTRONICS ENGINEERING WITH HONOURS**  
**(ZK23)**

FIRST YEAR							
SEMESTER 1				SEMESTER 2			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
<b>UNIVERSITY CORE COURSE</b>							
DUS 3012	Military History	2	-	MPU 3132	Appreciation of Ethics and Civilizations	2	-
MPU 3142	Philosophy and Current Issues	2	-				
LLE 3012	English For Academic Writing	2	-				
DUS 3022	Introduction to Strategic Studies	2	-				
<b>UNIVERSITY ELECTIVE COURSE</b>							
PLS 3111	PALAPES**	1**	-	QKX 31X2/ ALK 3112/ PLS 3121	Co-Curriculum/ General Military Training*/ PALAPES**	2/2*/1**	-
<b>FACULTY CORE COURSE</b>							
EFA 3253	Engineering Mathematics I (Calculus III)	3	-	EFA 3213	Engineering Mathematics II (Differential Equation)	3	-
				EFC 3223	Computing I (C and C++)	3	-
<b>PROGRAM CORE COURSE</b>							
EEE 3323	Circuit Analysis I	3	-	EEE 3313	Digital Electronics	3	-
EFB 3212	Introduction to Engineering	2	-	EEE 3333	Circuit Analysis II	3	EEE 3323#
EEE 3311	Engineering Lab I	1	-	EEE 3321	Engineering Lab II	1	EEE 3311#
<b>TOTAL</b>		<b>17/17*/ 18**</b>		<b>TOTAL</b>		<b>17/17*/ 16**</b>	

Civillian Student

\* Cadet Officer

\*\* PALAPES

+ Must Pass

# Must Taken

SECOND YEAR							
SEMESTER 3				SEMESTER 4			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
<b>UNIVERSITY CORE COURSE</b>							
				MPU 3312	Nationhood in World Politics	2	-
				LLE 3032	Al-Ghazali's Dialogue: English Communication	2	-
<b>UNIVERSITY ELECTIVE COURSE</b>							
QKX 31X2/ ALK 3122/ PLS 3131	Co-Curriculum / General Military Training* / PALAPES**	2/2*/1**	-	QKS 3172/ PLS 3141	Unarmed Combat / PALAPES	2*/1**	-
<b>FACULTY CORE COURSE</b>							
EFA 3233	Engineering Mathematics IIIA (Complex Variable)	3	-	EFA 3223	Engineering Mathematics IV (Statistics)	3	-
EFC 3213	Computing II (Numerical Methods and Engineering Softwares)	3	-				
<b>PROGRAM CORE COURSE</b>							
EEE 3433	Analog Electronics & Devices	3	EEE 3333#	EEE 3443	Analog Circuits & Systems	3	EEE 3433#
EEE 3423	Microprocessor & Microcomputer	3	EEE 3313#	EEE 3513	Principles of Communication	3	EEE 3463#
EEE 3463	Signals & Systems	3	EEE 3333#	EEE 3483	Instrumentation & Control Engineering	3	EEE 3463#
EEE 3331	Engineering Lab III	1	EEE 3321#	EEE 3341	Engineering Lab IV	1	EEE 3331#
<b>TOTAL</b>		<b>18/18*/17 **</b>		<b>TOTAL</b>		<b>17/19* /18**</b>	

- Civillian Student
- \* Cadet Officer
- \*\* PALAPES
- + Must Pass
- # Must Taken

THIRD YEAR							
SEMESTER 5				SEMESTER 6			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
<b>UNIVERSITY CORE COURSE</b>							
LLF 3XX1/ LLA 3XX1	Foreign Language I	1	-	LLF 3XX1/ LLA 3XX1	Foreign Language II	1	-
DUS 3032	Military Law and Laws of Armed Conflict	2	-	DUM 3022	Military Leadership	2	-
				MPU3412 or MPU3422	Human Movement Science or Community Service	2	-
<b>UNIVERSITY ELECTIVE COURSE</b>							
QKX 31X2/ PLS 3151	Co-Curriculum/ PALAPES**	2/1**	-	PLS 3161	PALAPES**	1**	-
<b>PROGRAM CORE COURSE</b>							
EEE 3473	Digital Systems	3	EEE 3313#	EEE 3503	Electrical Machines & Drives	3	EEE 3583+
EEE 3553	Power Systems	3	EEE 3333#	EEE 3573	Capstone II	3	EEE 3562+
EEE 3583	Power Electronics	3	-	EEE 3593	Electrical Power Generation & High Voltage Engineering	3	EEE 3553+
EEE 3562	Capstone I	2	EEE 3433# EEE 3400#	EEE 3523	Electromagnetic Fields & Waves	3	EFA 3233#
EEE 3351	Engineering Lab V	1	EEE 3341#	EEE 3361	Engineering Lab VI	1	EEE 3351#
<b>TOTAL (I)</b>		<b>17/15*/ 16**</b>		<b>TOTAL (I)</b>		<b>18/18*/ 19**</b>	

Civillian Student

\* Cadet Officer

\*\* PALAPES

+ Must Pass

# Must Taken

THIRD YEAR			
INTER-SESSION			
CODE	COURSE	CREDIT	PRE-REQUISITE
EEE 3574	Industrial Training	4	Passed 60 Credit Hours
<b>TOTAL</b>		<b>4</b>	

FOURTH YEAR							
SEMESTER 7				SEMESTER 8			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
<b>UNIVERSITY CORE COURSE</b>							
MPU 3212	Basic Entrepreneurship	2	-				
<b>PROGRAM CORE COURSE</b>							
EEE 3602	Final Year Project I	2	EEE 3563 <sup>#</sup>	EEE 3614	Final Year Project II	4	EEE 3602 <sup>+</sup>
EEE 3643	Electronic Drives & Applications	3	EEE 3503 <sup>#</sup>	EEE 3653	Electrical Energy Utilization	3	EEE 3553 <sup>#</sup>
EEE 3633	Engineers in Society	3	-	EEE 3623	Engineering Management	3	-
<b>PROGRAM TECHNICAL SPECIALIZATION COURSE</b>							
EET/EET/ EEC/EEB/ EEN 37X3	Technical Specialization I	3	-	EET/EET/ EEC/EEB/ EEN 37X3	Technical Specialization III	3	-
EET/EET/ EEC/EEB/ EEN 37X3	Technical Specialization II	3	-	EET/EET/ EEC/EEB/ EEN 37X3	Technical Specialization IV	3	-
<b>TOTAL</b>		<b>16</b>		<b>TOTAL</b>		<b>16</b>	

Civillian Student

- \* Cadet Officer
- \*\* PALAPES
- + Must Pass
- # Must Taken

**COURSE STRUCTURE AND TOTAL CREDIT REQUIREMENT FOR THE PROGRAM OF  
BACHELOR OF AVIATION (ZK61)**

Duration of the program is 4 years with 2 years in university (2u) and 2 years in industry (2i). During the 2u phase, the program will run in 4 semesters as with other mainstream program with 14 weeks every semester, 1 week of exam revision week and 3 weeks of exam period. During the 2i phase, the program will run in Work-Based Learning (WBL) environment throughout the whole 2 years and the conducted in module form where examination will be held after completion of each module accordingly. The components of the programme and their respected credit value are shown below:

COURSE	CREDIT	
	2u (University)	2i (Industry)
<b>University Courses:</b> iii. University Core iv. University Elective	24 6	-
<b>Program Core Courses:</b> iii. Program Core	30	20
<b>Program Elective Course (Technical Specialization)</b>	12	30
<b>Total (2u &amp; 2i)</b>	72	50
<b>TOTAL CREDIT FOR GRADUATION</b>	<b>122</b>	

**LIST OF PROGRAM CORE  
BACHELOR OF AVIATION (ZK61)**

Following are the list of core program need to be completed during academic and industry phase (48 credits):-

Code	Course	Credit
EFA 3263	Algebra and Trigonometry	3
EVA 3303	Statics and Dynamics	3
EVA 3313	Introduction to Electrical and Electronics	3
EFA 3273	Calculus	3
EVA 3383	Thermofluids	3
EVA 3333	Introduction to Flight	3
EVA 3343	Flight Mechanics	3
EVA 3353	Aircraft Structure and System	3
EVA 3363	Aircraft Power Plant	3
EVA 3373	Aircraft Avionics and Instrumentation	3
EVV 3903	Basic Military Training	3
EVV 3913	Service Knowledge	3
EVV 3922	Leadership	2
EVV 3932	Navigation and Fields	2
EVV 3953	Beginner Ground School	3
EVV 3962	Intermediate Ground School	2
EVV 3973	Advanced Ground School	3

## LIST OF ELECTIVE PROGRAM (TECHNICAL SPECIALIZATION)

List of courses for elective program (technical specialization) during academic phase (12 credits)

Code	Course	Credit	Code	Course	Credit
<b>*Elective: Management Domain</b>					
TMM 3283	Human Resources Management	3	DMR 3363	Financial Management and Accounting	3
TMM 3293	Management Theory and Practice	3	DMR 3343	Organisational Behaviour	3

Code	Course	Credit	Code	Course	Credit
<b>*Elective: Computing Domain</b>					
TST 3213	Computer Organisation and Architecture	3	TST 3233	Computer Network	3
TSP 3213	Fundamentals of Programming	3	TSP 3223	Object-oriented Programming	3

Code	Course	Credit	Code	Course	Credit
<b>*Elective: Logistic Domain</b>					
DMR 3763	Supply Chain for Logistic	3	DMM 3733	Integrated Logistics Support	3
DMM 3933	Principles of Accounting	3	TML 3333	Military Logistics	3

Code	Course	Credit	Code	Course	Credit
<b>*Elective: Aviation Domain</b>					
EVE 3703	Flight Control	3	EVE 3723	Occupational Safety and Health in Aviation	3
EVE 3713	Introduction to Aircraft Maintenance	3	EVE 3733	Aviation Management and Security	3

\* All elective courses should be selected from the same domain.

FIRST YEAR - COURSEWORK MODE (2U)							
SEMESTER 1				SEMESTER 2			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
University Core Courses							
LLF 3XX1	Foreign Language I	1	-	LLF 3XX1	Foreign Language II	1	-
LLA 3XX1	Foreign Language I	AUDIT	-	LLA 3XX1	Foreign Language II	Audit	-
LLE 3012	English for Academic Writing	2	-	LLE 3032	Al-Ghazali Dialogue: English Comm	2	-
MPU 3142	Philosophy and Currents Issues	2	-	MPU 3132	Appreciation of Ethics and Civilizations	2	-
DUS 3022	Introduction to Strategic Studies	2	-	MPU 3312	Nationhood	2	-
DUS 3012	Military History	2	-				
University Elective Courses							
				ALK 3112	General Military Training I	2	-
Faculty Core Courses							
EFA 3263	Algebra and Trigonometry	3	-	EFA 3273	Calculus	3	-
Program Core Courses							
EVA 3303	Statics and Dynamics	3	-	EVA 3383	Thermofluids	3	-
EVA 3313	Introduction to Electrical and Electronics	3	-	EVA 3333	Introduction to Flight	3	-
<b>TOTAL</b>		<b>18</b>		<b>TOTAL</b>		<b>18</b>	

SECOND YEAR - COURSEWORK MODE (2U)							
SEMESTER 3				SEMESTER 4			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
University Core Courses							
DUM 3022	Military leadership	2	-	DUS 3032	Military Law and Law of Arm Conflict	2	-
MPU 3412	Human Movement Science	2	-	MPU 3212	Entrepreneurship	2	-
University Elective Courses							
ALK 3122	General Military Training II	2	-	QKS 3172	Unarmed Combat	2	-
Faculty Core Courses							

Program Core Courses							
EVA 3343	Flight Mechanics	3	-	EVA 3363	Aircraft Power Plant	3	-
EVA 3353	Aircraft Structure and System	3	-	EVA 3373	Aircraft Avionic and Instrumentation	3	-
Program Elective Courses							
XXX 3XX3	* Elective I	3	-	XXX 3XX3	* Elective III	3	-
XXX 3XX3	* Elective II	3	-	XXX 3XX3	* Elective IV	3	-
<b>TOTAL</b>		<b>18</b>		<b>TOTAL</b>		<b>18</b>	

Note: Student must pass all courses offered during the academic phase in order to continue their study in the industrial phase.  
\* Refer list of elective program.

During Industrial Mode (2i), the program will run in Work-Based Learning throughout the whole 2 years (year 3 and year 4) and the program will run in module form where examination will be conducted after completion of every module.

THIRD YEAR - INDUSTRIAL MODE (2i)							
SEMESTER 5 – PHASE 1				SEMESTER 6 – PHASE 2			
6 MONTHS				4 MONTHS			
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
University Core Courses							
University Elective Courses							
Program Core Courses							
EVV 3903	Basic Military Training	3	-	EVV 3942	Survival	2	-
EVV 3913	Service Knowledge	3	-	EVV 3953	Beginner Ground School	3	-
EVV 3922	Leadership	2	-	EVV 3962	Intermediate Ground School	2	-
EVV 3932	Navigation and Field	2	-	EVV 3973	Advanced Ground School	3	-
<b>TOTAL</b>		<b>10</b>		<b>TOTAL</b>		<b>10</b>	

Note: (Semester 5 – phase I)

1. Student must pass all courses in *Mod Pengajian Kerja Kursus (2u)* with minimum CGPA 2.70 in order to register in Phase I, semester 5.
2. Pass all courses with minimum mark 60%.
3. Student must pass all courses offered during semester 5 in order to continue their study in Phase II, semester 6.
4. Student will be considered fail during this semester if they did not meet the requirements i.a.w MPPLU TCI by RMAF.

Note: (Semester 6- phase II)

1. Pass all courses with minimum mark 75%.
2. The credit for EVV 3942 will not be used for CGPA calculation.
3. Student must pass all courses offered during Phase II, semester 6 in order to continue their study in Phase III, semester 7.
4. Student will be considered fail during this semester if they did not meet the requirements i.a.w MPPLU TCI by RMAF.



FOURTH YEAR - INDUSTRIAL MODE (2i)							
SEMESTER 7 – PHASE III **ELECTIVE TRACK FIXED WING				SEMESTER 8 – PHASE III **ELECTIVE TRACK ROTARY WING			
16++ MONTHS							
CODE	COURSE	CREDIT	PRE-REQUISITE	CODE	COURSE	CREDIT	PRE-REQUISITE
University Core Courses							
University Elective Courses							
Program Core Courses							
Basic Flying Semester 7				Basic Flying Semester 7			
EVF 3707	Fixed Wing Pre Flight Preparation	7	-	EVR 3807	Rotary Wing Pre Flight Preparation	7	-
EVF 3711	Fixed Wing Basic Flying	11	-	EVR 3811	Rotary Wing Basic Flying	11	-
Advance Flying Semester 8				Advance Flying Semester 8			
EVF 3726	Fixed Wing Intermediate Flying	6	-	EVR 3826	Rotary Wing Intermediate Flying	6	-
EVF 3736	Fixed Wing Advanced Flying	6	-	EVR 3836	Rotary Wing Advanced Flying	6	-
<b>TOTAL</b>		<b>30</b>		<b>TOTAL</b>		<b>30</b>	

\*\* Elective track will be set by the RMAF

Note:

1. Pass all courses with minimum mark 75% (theory) and 65% (Practical).
2. Student must pass all courses in Phase III, semester 7 and 8 consecutively.
3. Student who fail during phase III can be consider for non-flying elective credit (30 credits) subject to MAF approval.
4. Student will be considered fail during Phase III, semester 7 and 8, if they did not meet the requirements i.a.w MPPLU TCI by RMAF.