

**BACHELOR OF AERONAUTICAL ENGINEERING TECHNOLOGY
(PROFESSIONAL PILOTING) WITH HONOURS (BDT)**

List of Courses for Bachelor of Aeronautical Engineering Technology (Professional Piloting) with Honours

YEAR	CODE	SEMESTER I COURSE	CREDIT	CODE	SEMESTER II COURSE	CREDIT	CODE	SEMESTER III COURSE	CREDIT	
1	UWB 10101	English for Academic Purpose	1	UQ* 1***1	Co-Curriculum I	1	BDU 17101	Engineering Technology Laboratory II	1	
	UWA 10102/ UWA 10202	Islamic Studies / Moral Studies	2	UWB 10202	Effective Communication	2	BDU 10703	Aircraft Aerodynamics (Theory)	3	
	BWM 11803	Engineering Technology Mathematic I	3	BWM 11903	Engineering Technology Mathematic II	3	BDU 10803	Electrical and Electronics Technology	3	
	BDU 10103	Computer Programming	3	BDU 10403	Thermofluids	3				
	BDU 10202	Introduction to Aircraft	2	BDU 10503	Engineering Mechanics	3				
	BDU 10303	Engineering Drawing	3	BDU 10603	Engineering Technology Material	3				
	BDU 18001	Aeronautical Eng. Technology Practice I	1	BDU 17001	Engineering Technology Laboratory I	1				
	UWB 10*02	Foreign Language	2	UWS 10202	Ethics Relation	2				
				17			18		7	
		UWB 20302	Technical Writing	2	UQ* 1***1	Co-Curriculum II	1	BDU 28106	Industrial Training	6
2	BWM 22003	Engineering Technology Mathematic III	3	UWB 20402	Creativity and Innovation	2				
	BDU 20103	Aircraft Structure	3	UWA 10302	Islam and Asia Civilization	2				
	BDU 20203	Aircraft Propulsion (Theory)	3	BDU 20503	Management and Professional Ethics	3				
	BDU 20303	Electromechanical and Control Systems	3	BDU 20603	Flight Mechanics (Theory)	3				
	BDU 20403	Aircraft Systems (Theory)	3	BDU 20703	Aircraft Design	3				
	BDU 28001	Aeronautical Eng. Technology Practice II	1	BDU 29002	Bachelor Degree Project I	2				
				18			16		6	
		UWS 10103	Nationhood and Current Development	3	BDT 30102	PPL Ground School	2	BDT 30903	CPL Flying I	3
	BDU 39004	Bachelor Degree Project II	4	BDT 30202	Air Law	2				
	BDU 30103	Airport Management	3	BDT 30302	Human Performance & Limitations	2				
3	BDU 30203	Aviation Economy and Management	3	BDT 30402	Flight Mechanics (Practical)	2				
	BPK 20802	Entrepreneurship	2	BDT 30501	Aircraft Electrical Systems	1				
	BPK 30902	Engineering Economy	2	BDT 30602	Aircraft Systems (Practical)	2				
				BDT 30702	Aircraft Propulsion Systems (Practical)	2				
				BDT 30803	PPL Flying	3				
				17			16		3	
	BDT 40102	CPL Flying II	2	BDT 40803	CPL Flying III	3	BDT 41102	ATPL Flying	2	
	BDT 40202	Radio Aids	2	BDT 40903	Aircraft Performance Application	3				
	BDT 40302	Flight Planning	2	BDT 41003	Mass & Balance	3				
	4	BDT 40402	Advanced Meteorology (Theory)	2	BDU 40103	Aviation English	3			
BDT 40502		Advanced Meteorology (Practical)	2							
BDT 40602		Instruments	2							
BDT 40703		Advanced Navigation	3							
				15			12		2	
TOTAL CREDIT									147	

YEAR 1

**YEAR 1
SEMESTER I**

UWB 10101

ENGLISH FOR ACADEMIC PURPOSES

SYNOPSIS:

English for Academic Purposes focuses on fulfilling student's academic requirements such as the acquisition of reading, writing, speaking and listening skills in English. The course also provides opportunities for students to acquire note taking and library skills. Students will be exposed to insights and skills in English that are most relevant to them in their tertiary studies and academic work. Students are encouraged to participate actively in a communicative environment and practice using English language in their daily life.

REFERENCES:

1. Ng.KS et al., (2000), *Study Skills for the Malaysian University English Test*. Kuala Lumpur: Federal Publication.
2. Ellis, R., (1997), *Communication for Engineers: Bridge that Gap*, New York, Arnold.
3. Pfeiffer, W.S., (2009), *Technical Writing: A Practical Approach*, Prentice Hal.
4. Lucas, S.E. (1995), *The Art of Public Speaking*, New York. McGraw-Hill Inc.
5. Samuels, M.S., (1989), *The Technical Writing Process*, New York, Oxford University Press.

UWA 10102

ISLAMIC STUDIES

SYNOPSIS:

This course explains about Islamic concepts which cover aqidah, syariah and akhlak. The scope of the discussion involves the Islamic principles, iman's principles and Ihsan. Focus will also be given on the basic of Islam that emphasizes on the concept of tauhid, ibadah and akhlak. This course also clarifies about the foundation of Islam (maqasid al syariah), current issues and the interrelation with akhlak.

REFERENCES:

1. Harun Din, (Dr.), (1990), *Manusia Dan Islam*, Dewan Bahasa dan Pustaka.
2. Mustafa Abd. Rahman, (1988), *Hadith Empat Puluh*, Dewan Pustaka Fajar
3. Mustafa Hj. Daud, (1989), *Institusi Kekehuargaan Islam*, Dewan Pustaka dan Bahasa.
4. Paizah Hj. Ismail, (1991), *Undang-undang Jenayah Islam*, Dewan.

UWA 10202

MORAL STUDIES

SYNOPSIS:

This subject explores the moral concepts, some aspects related to the morality and its importance in our daily lives, some western moral theories, moral values in great religions of the world, morality and ethics in professional careers and contemporary moral issues.

REFERENCES:

1. Eow Boon Hin, 2002, *Moral Education*, Longman.
2. Ahmad Khamis, 1999, *Etika Pendidikan Moral Untuk Institusi Pengajian Tinggi*, Kuala Lumpur, Kumpulan Budiman,
3. Mohd Nasir Omar, 1986, *Falsafah Etika; Perbandingan Islam dan Barat*, Kuala Lumpur, JPM.
4. Mohd Janib Johari, 1994, *Moral; Teori, Aplikasi dan Permasalahan*, Johor Bahru, Penerbitan UTM.
5. Binkeley, Luther J, 1961, *Contemporary Ethical Theories*, New York, Citadel Press

BWM 11803

ENGINEERING TECHNOLOGY MATHEMATICS I

SYNOPSIS:

This course covers several topics which are limits and continuity, differentiation and applications, integration, further differentiation and integration and applications, power series, vector calculus, matrices and applications, and complex variables.

REFERENCES:

1. Anton, H., Bivens, I., Davis, S. (2002), *Calculus*, John Wiley & Sons, Inc.
2. Smith, R. T., Minton, R. B. (2006), *Calculus: Concept & Connection*, New York: McGraw-Hill.
3. Abd. Wahid Md. Raji et.al, (2000), *Kalkulus Malaysia*: UTM Publication.
4. Larson, R. E., Hostetler, R. P., Edward, B. H. (1998), *Calculus with Analytic Geometry*, 6th Ed. USA: Houghton Mifflin Company.
5. Thomas, G. B., Finney, R. L. (1996), *Calculus and Analytic Geometry*, 9th Ed. USA: Addison-Wesley Publishing Company.
6. Stroud, K. A. (1995), *Engineering Mathematics*, 4th Ed. London: Macmillan Press Ltd.

BDU 10103

COMPUTER PROGRAMMING

SYNOPSIS:

This course introduces the basic programming by using a high level programming language, C. History and programming languages evolution, data types, input and output operations. Structured dan controlled programming; while, for, switch, if-else loops. The use of function, arrangement, structure, and indicator.

REFERENCES:

1. Byron S. Gottfried, *Programming with C*, Mc Graw Hill, 1990.
2. Baharudin Mohamed. *ETL, A Book On C*, Mc Graw Hill, 2002.
3. Marini Abu Bakar et al, *Pengaturcaraan C*, Prentice Hall, 1999.
4. Nor Haizan Mohamed Radzi, *Pengaturcaraan C*, UTM, 1998.
5. Marini Abu Bakar et al., *Struktur Data Menggunakan C*, Prentice Hall, 1999.
6. Jen R. Nanly, *C Programme Design For Engineering*, Addison Wesley, 1995.

BDU 10202

INTRODUCTION TO AIRCRAFT

SYNOPSIS:

This course covers the visualizations of aircraft anatomy, control surfaces, cockpit instruments, electrical systems, hydraulic systems, engine and lubrication systems, operation and flying exposure.

REFERENCES:

1. Stinton, D. (1998), *The Anatomy of The Airplane*, 2nd Ed., AIAA Education Series.
2. Moir, I., and A. Seabridge (2001), *Aircraft Systems: Mechanical, Electrical, and Avionics Subsystems Integration*, AIAA Education Series.
3. Jackson, S. (1997), *Systems Engineering for Commercial Aircraft*, Ashgate, Aldershot, UK
4. Jarrett, D. N. (2005), *Cockpit Engineering*, Ashgate, Aldershot.
5. Hillman, Paul E. (2000), *The Pilot's Handbook of Aeronautical Knowledge*, 4th Ed., McGraw-Hill.
6. David Harris (2004), *Flight Instruments and Automatic Flight Control Systems*, 6th Ed., Blackwell Science.

BDU 10303

ENGINEERING DRAWING

SYNOPSIS:

Introduction of engineering drawing: equipments and materials. Drawing standard. Lettering and lines. Dimension lines. Plane geometry. Orthographic projection view. Cross section view. Drawing of isometric, oblique and perspective. Mechanical drawing of single component. Ordinary routines and convention. Bolt, screw and nut. Tolerance, limit and assembly. Surface texture. Welding. Introduction of drawing aided by computer software. Drawing command and two-dimensional drawing (2D).

REFERENCES:

1. A.W.Boundy, (1996), *Engineering Drawing*, Fifth Edition, Mc.Graw Hill.
2. Gieseckle, Mitchel. Hill, (2000), *Engineering Graphics*, Seventh Edition, Prentice Hall, Prentice Hall.
3. Paige Davis, Karen Renee, (2003), *Engineering Drawing*, Prentice Hall.
4. Khairul Anuar Hanafiah, (2000), *Lukisan Kejuruteraan Berbantu Komputer*, Universiti Teknologi Malaysia.
5. Warren J.Luzadder, John M.Duf, (1990), *Fundamental of Engineering Drawing*, Eleventh Edition, Prentice Hall.
6. Robert L. Knight and William R. Valaski (1991), *AutoCAD quick reference*, Que Corp., 1991.

BDU 18001

**AERONAUTICAL ENGINEERING TECHNOLOGY
PRACTICE I**

SYNOPSIS:

This practical course is an introduction to Aircraft Structural & Composite Repair Practices Module where students will be exposed to the practical hands-on laboratory experience by allowing them to inspect, repair and perform maintenance on aircraft's structure and composites components along with welding and riveting practices, composites hand lay-up process and required forms before and after the repair practices.

REFERENCES:

1. Aubin, Bruce R., (2004), *Aircraft Maintenance: The Art and Science of Keeping Aircraft Safe*, SAE International, Warrendale, PA.
2. Alan Baker, Stuart Dutton, Donald Kelly, (2004), *Composite Materials for Aircraft Structures*, American Institute of Aeronautics and Astronautics, Reston, VA.
3. Klein, Vladislav, (2006), *Aircraft System Identification: Theory and Practice*, American Institute of Aeronautics and Astronautics, Reston, VA.

UWB 10*02

FOREIGN LANGUAGE

SYNOPSIS:

This course is designed for students to learn the basic of foreign language. There are several options in the offered language courses and students have to choose a foreign language that suits their interest. Among the language courses that are available are French, Dutch, Japanese, Korean, Mandarin, Spanish, and Arabic. Students are exposed to the skills of listening, reading, speaking, and writing with basic vocabulary, grammar and structure. Students are also exposed to the real daily situations which will help them to communicate using the chosen foreign language.

REFERENCES:

1. Capelle Guy et.al, *Méthod De Franais: Le Nouvel Espaces 1*, HACHETTE F.L.E, 1995.
2. Hartmut Aufderstrasse, *Themen Neu 1*, Hueber, 2000.
3. Morio Takahashi, *Japanese Conversation for Beginners*, Bonjinsha, 1985.
4. Sang-Oak Lee et.al, *Korean Through English*, Elizabeth NJ Hollym, 1999.
5. Wong, Lit Khiong, *Mandarin Made Easy*, S. S. Mubarak & Brothers, 2001.
6. Fernndez, Nieves Garcia and Jess Snchez, *Nivel Elementel*, Espanol, 2000.
7. Hashim Hanafiah, *Al- Lughah al-Arabiyyah*, Percetakan Watan, 1981.

**YEAR 1
SEMESTER II**

UQ* 1*1 CO-CURRICULUM I**

SYNOPSIS:

The course offers various options of co-curriculum activities for diploma and bachelor degree students. Three types of activities are offered; Sport and Recreation, Clubs and Associations and Uniform-dressed Teams.

UWB 10202 EFFECTIVE COMMUNICATION

SYNOPSIS:

This course emphasizes on problem based learning approach and focuses on developing students' delivery of speech in oral interactions and presentations confidently. Importance is given on mastery of self-directed learning, team-work, research, oral presentations, reasoning and creativity. Students will also be exposed to anticipate and deal with questions during a job interview session. This course is to enable students to acquire knowledge and skills necessary for conducting and participating in meetings. It includes writing of meeting documents, letter writing, and resume.

REFERENCES:

1. Davies, J.W. (1996), *Communication for Engineering Students*, Essex : Longman.
2. Dobson, A. (2000), *Writing Business Letter*, Kuala Lumpur, Golden Book Centre.
3. Wee, Keng Neo. (2004), *Jump Start Authentic Problem-Based Learning*, Singapore, Prentice Hall.
4. Ellis, R. (1997), *Communication for Engineers: Bridge that Gap*, New York, Arnold.
5. Hybels, S. and Weaver, R.L. (1998), *Communicating Effectively*, Boston.

BWM 11903 ENGINEERING TECHNOLOGY MATHEMATICS II

PRE-REQUISITE ENGINEERING TECHNOLOGY MATHEMATICS I

SYNOPSIS:

This course covers several topics which are introduction to differential equations, first order ordinary differential equation and its applications, 2nd order derivative with non-homogeneous coefficients, applications of 2nd order derivative with constant coefficients, Laplace transformation, inverse Laplace transformation, Fourier series, and solution for partial differential equations.

REFERENCES:

1. A. Wahid, Mohd Nor, *Persamaan Pembezaan Biasa*, UTM Publication, 2002.
2. Howard Anton, *Calculus With Analytic Geometry*, John Wiley New York, 1992.
3. Berkey D.D, Blanchard Paul, *Calculus*, Saunders College Publishing New York, 1992.
4. Thomas & Finey, *Calculus*, Addison Wesley, 1996
5. Straud, K.A, *Engineering Mathematics*, Macmillan Publication, 1994.
6. Straud, K.A, *Further Engineering Mathematics*, Macmillan Publication, 1994

BDU 10403

THERMOFLUIDS

PRE-REQUISITE

ENGINEERING TECHNOLOGY MATHEMATICS I

SYNOPSIS:

This course covers the basic concepts of thermodynamics; properties of pure substances; energy transfer by heat, work, and mass; the law of thermodynamics and the thermodynamics cycle. The fundamental of fluid mechanics will also be covered; fluid properties, fluid statics, hydrostatic pressure and buoyancy, fluid kinematics, continuity principle, Bernoulli and momentum equations, and similarity and dimensional analysis.

REFERENCES:

1. Michael J Moran and Howard N Shapiro, *Fundamentals of Engineering Thermodynamics*, John Wiley & Sons, 2007.
2. Yunus A. Cengel and Micheal A. Boles, *Thermodynamics: An Engineering Approach*, McGraw Hill 2006.
3. Richard E. Sonntag and Claus Borgnakke, *Introduction to Engineering Thermodynamics*, John Wiley & Sons, 2001.
4. Stephen R. Turns, *Thermodynamics: Concepts and Applications*, Cambridge University Press, 2006.
5. Richard E. Sonntag, Claus Borgnakke and Gordon J. Van Wylen, *Fundamentals of Thermodynamics*, John Wiley & Sons, 1998.
6. Yunus A. Cengel and John M. Cimbala, *Fluid Mechanics: Fundamentals and Applications*, McGraw Hill, 2010.
7. Kundu and Pijush K, *Fluid Mechanics*, Academic Press, 2008.
8. Frank M. White, *Fluid Mechanics*, McGraw Hill, 2008.
9. Carl Schaschke, *Fluid Mechanics: Worked Example for Engineers*, Warwickshire: IChemE, 1998.

BDU 10503

ENGINEERING MECHANICS

SYNOPSIS:

Introduction to mechanics; force system, vector and resultant, moment and couple, member and structure. Introduction to dynamics; kinematics of particle, kinetics of particle, and kinetics of particles system.

REFERENCES:

1. R.C.Hibler, *Engineering Mechanics: Static and Dynamic*, Macmillan Publishing Company, 2006.
2. J.L. Meriam, L.G.Kraige, *Engineering Mechanics: Statics and Dynamic*, Prentice Hall, 2006.
3. Keith M.Walker, *Applied Mechanics for Engineering Technology*, Prentice Hall, 2007.
4. Ghazali M.I, *Mekanik Kejuruteraan*, Penerbit KUiTTTHO, 2002.
5. Mohamad A.G, *Mekanik Badan Tegar Dinamik*, Penerbit UTM, 1992.
6. Yusof Ahmad, *Mekanik Statik*, Penerbit UTM, 1999.

BDU 10603

ENGINEERING TECHNOLOGY MATERIAL

SYNOPSIS:

Introduction; materials structure; crystal imperfections and diffusion; mechanical properties of materials; phase diagram and heat treatment; metal, ceramic, polymer and alloy; composite; introduction to electrical, optical and magnetic properties.

REFERENCES:

1. Callister, W.D. Jr, (2007), *Materials Science and Engineering: An Introduction*, John Wiley & Sons.
2. Smith, W.F., (2004), *Principles Of Materials Science And Engineering*, McGrawHill.
3. Shackelford, J.F., (2005), *Introduction To Materials Science For Engineers*, Prentice Hall.
4. Budinski K.G., Budinski M.K., (2000), *Engineering Materials: Properties and Selection*, Prentice Hall.
5. Schaffer, J.P., Saxena et al, (1999), *The Science and Design of Engineering Materials*, McGraw-Hill.

BDU 17001

ENGINEERING TECHNOLOGY LABORATORY I

SYNOPSIS:

Students are required to conduct several laboratory experiments of the fluid mechanics, thermodynamics, applied mechanics and engineering technology materials.

REFERENCES:

1. Hibbeler, R.C, 2004, *Engineering Mechanics- Statics*, Prentice Hall.
2. James M. and Timoshenko, S. P., 1997, *Mekanik Bahan*, Translated by Zainuddin, A.Z., Jantan, M. H. and Ramli, Y., Penerbit UTM.
3. Mott R.L., 2000, *Applied Fluid Mechanics*, International Edition, Prentice Hall.
4. Yusuf A. Cengel and Michael A. Bole, 2006, *Thermodynamics: An Engineering Approach*, Mc Graw Hill, Boston, US.
5. Callister, W.D. Jr., 2007, *Materials Science and Engineering : An Introduction*, John Wiley & Sons.

UWA 10202

ETHNIC RELATIONS

SYNOPSIS:

This subject focuses on the conceptual and practical of the ethnic relation in Malaysia's community. The discussions will comprise the concepts of ethnic relation and the history of plural society construction. The matter of constitution as the core of the societal life will also be covered. Discussions will also look at the relationship between the development and the ethnicity in the aspect of economy, politics and social based on the approach of top-down and bottom-up by the government and the society.

REFERENCES:

1. Zaid Ahmad, Ho Hui Ling, Sarjit Sing Gill dll (2006), *Hubungan Etnik di Malaysia*, Oxford Fajar Sdn. Bhd.
2. Cheah Boon Kheng (2003), *The Making of a Nation Malaysia*, Institute of Southeast Asia Studies (Singapore).
3. Aziz Deraman (1992), *Tamadun Melayu dan Pembinaan Bangsa Malaysia*, Arena Ilmu Sdn. Bhd.
4. Comber, Leon. (1983), *13 May 1969 : A Historical Survey of Sino-Malay Relations*, Heinemann.
5. John Rex (1985), *Hubungan Ras Dalam Teori Sosiologi*, Dewan Bahasa dan Pustaka.
6. Andaya, B.W. and Andaya, L.Y. (1982), *A History of Malaysia*, Macmillan.

**YEAR 1
SEMESTER III**

BDU 17101 ENGINEERING TECHNOLOGY LABORATORY II

SYNOPSIS:

Students are required to conduct several laboratory experiments of the electrical technology, control system, and aerodynamics.

REFERENCES:

1. Flyod (2003), *Principles of Electric Circuits*, Prentice Hall.
2. John Bird (2000), *Electrical and Electronic Principles and Technology*, Newness, 2007.
3. Norman S. Nise, *Control Systems Engineering*, John Wiley & Sons, 2004.
4. Houghton, E. L., (2003), *Aerodynamics for Engineering Students*, Butterworth-Heinemann.
5. Jewel B. Barlow, William H. Rae, Alan Pope, (1999), *Low-speed Wind Tunnel Testing*, John Wiley & Sons.
6. John D. Anderson Jr., (2005), *Introduction to Flight*, McGraw-Hill Higher Education.

BDU 10703 AIRCRAFT AERODYNAMICS (THEORY)

SYNOPSIS:

The course covers the fundamental of aerodynamics, aerodynamic forces and moments and airfoil characteristics. It introduces concepts in incompressible airfoil theory, including symmetric and cambered airfoils using analytical and numerical approaches. The course also covers incompressible wing theory, including down wash, lifting-line theory, elliptic wings, general twisted wings, application of fundamentals to the design of a wing to meet given performance criteria. Finally, the course covers topics in elementary gas dynamics, including expansion waves and shock waves, as well as thin airfoils in compressible flows.

REFERENCES:

1. Anderson J.D., (2001), *Fundamentals of Aerodynamics*, McGraw-Hill.
2. Bertin J.J., (2002), *Aerodynamics for Engineers*, Prentice Hall.
3. Anderson J.D., (1999), *Aircraft Performance and Design*, McGraw Hill.
4. Anderson J.D., (1995), *Computational Fluid Dynamics: The Basics with Applications*, McGraw-Hill.
5. Katz J. and Plotkin A., (1991), *Low-Speed Aerodynamics: From Wing Theory to Panel Methods*, McGraw-Hill.
6. Kuethe C.C., (1995), *Foundations of Aerodynamics, Bases of Aerodynamic Design*, John Wiley and Sons

BDU 10803

ELECTRICAL AND ELECTRONICS TECHNOLOGY

SYNOPSIS:

Basic definition; current, voltage, power, energy, and poles. Characteristics of ideal circuit, Kirchhoff laws for current and voltage. Method to analyse a.c current; currents at junction, currents at loops, voltage at nodes. Circuit theorems; Millman, Thevenin, and Norton. Energy storage; capacitor, inductor. Single phase circuit analysis. Electrical regulator.

REFERENCES:

1. Theraja B. L, Electrical, *Electronics And Telecommunication Engineering*, S. Chand & Company, 2007.
2. Sakar K., *Electrical and Electronics Engineering*, Pratheeba Publishers, 2007.
3. Storey Neil, *Electrical and Electronic Systems*, Pearson, 2004.
4. Mazur. Glen A, *Electrical Principles and Practices: Workbook*, American Technical Publishers, 1997.
5. Azli Yusof et.al., *Electrical Technology*, Penerbit UTHM, 2007.

YEAR 2

**YEAR 2
SEMESTER I**

UWB 20302 TECHNICAL WRITING

SYNOPSIS:

This course introduces students to report writing skills needed at tertiary level. Students will learn basic report writing skills such as proposals, progress report and analytical report. In order to do this, they will learn how to collect data using questionnaires. The data collected will be analyzed, transferred into graphic forms and presented orally and in writing. Prior to that, students will also be trained to polish up their skills in narrative and descriptive essays using accurate grammar, vocabulary and sentence structure.

REFERENCES:

1. Ng.KS et al., (2000). *Study Skills for the Malaysian University English Test*. Kuala Lumpur: Federal Publication.
2. Teoh, S. A. & Zainab Mohd. Noor (2000). *Test - Taking Strategies for MUET*. Kuala Lumpur: Penerbit Fajar Bakti.
3. Ellis, R. (1997). *Communication for Engineers*. Bridge that Gap. New York: Arnold.
4. Hybels, S. and Weaver, R.L. (1998). *Communicating Effectively*. Boston: McGraw Hill.
5. Pfeiffer, W.S. (2000) *Technical Writing: A Practical Approach*, New Jersey.
6. Lucas, S.E. (1995), *The Art of Public Speaking*. New York. McGraw-Hill Inc.

BWM 22003 ENGINEERING TECHNOLOGY MATHEMATICS III

PRE-REQUISITE ENGINEERING TECHNOLOGY MATHEMATICS I

SYNOPSIS:

This course covers several topics which are multivariable functions, multiple integrations, introduction to numerical analysis and error, finding root of nonlinear equations, systems of linear equations, interpolation, numerical differentiation, numerical integration, eigen values, numerical solution for ordinary differential equations, and partial differential equations.

REFERENCES:

1. Yusof Yaacob, *Kalkulus II Untuk Pelajar Sains Dan Pendidikan*, Penerbit UTM, 2000.
2. Yusof Yaacob dan Maslan Osman, *Matematik Kejuruteraan*, UTM, 2001.
3. Gerald L Bradley, Karl J Smith, *Calculus*, Prentice Hall, 1999.
4. Smith Robert T., *Calculus*, McGraw Hill, 2000.
5. Straud, K.A., *Engineering Mathematics*, Macmillan Publication, 1994.
6. Howard Anton, *Calculus With Analytic Geometry*, John Wiley & Sons, 1992.

BDU 20103

AIRCRAFT STRUCTURE

SYNOPSIS:

This course gives students an exposure to the knowledge of aircraft structure. The course will further discuss about the basic static analysis on the structures, basic sheet metal structures, basic theory of airframe inspection, and instability of aircraft components, introduction to analysis of composite materials and introduction to basic concepts in aeroelasticity.

REFERENCES:

1. Michael Chun, (2006), *Airframe Structural Design: Practical Design Information and Data on Aircraft Structures*, Adaso Adastra Engineering Center.
2. Megson, T.H.G., (2002), *Aircraft Structures for Engineering Students*, Butterworth-Heinemann.
3. West, H. H. and Geschwindner, L. F. (2001), *Fundamentals of Structural Analysis*, John Wiley & Sons.
4. Boresi, A. P. and Chong, K. P., (1999), *Elasticity in Engineering Mechanics*, John Wiley & Sons.
5. Peery, D.J., and Azar, J.J., (1982), *Aircraft Structures*, McGraw Hill.

BDU 20203

AIRCRAFT PROPULSION (THEORY)

PRE-REQUISITE

THERMOFLUIDS

SYNOPSIS:

This course is an introduction to propulsion which includes steady-one-dimensional flow, thrust and efficiencies, basic thrust equations, air breathing system. This course also covers aircraft jet engines, propellers, ramjets, scramjets, subsonic inlets, supersonic inlets. It introduces students to propellers, fans, rotors, propulsion thermodynamics and cycles, gas turbines, compressors and nozzles, turbojets, turbofans, and turboprops. Besides, this course covers topics in engine performance, engine and aircraft matching, combustors, and afterburners. Finally, topics on axial flow compressors, preliminary design of a stage, axial flow turbines, turbine and compressor matching are also included.

REFERENCES:

1. Farokhi Saeed, (2009), *Aircraft Propulsion*, John Wiley & Sons.
2. El-Sayed, Ahmed F., (2008), *Aircraft Propulsion And Gas Turbine Engines*, CRC Press.
3. Mattingly J.D., (2006), *Element of Gas Turbines and Rockets*, AIAA Education Series.
4. Oates G.C., (1998), *Aerothermodynamics of Gas Turbine and Rocket Propulsion*, AIAA Press.
5. Mattingly J.D., (1996), *Elements of Gas Turbine Propulsion*, McGraw-Hill.
6. Hill P.G. and Peterson C.R., (1992), *Mechanics and Thermodynamics of Propulsion*, Addison Wesley.

BAT 2033 ELECTRO-MECHANICAL AND CONTROL SYSTEMS

PRE-REQUISITE ENGINEERING TECHNOLOGY MATHEMATICS II

SYNOPSIS:

This course introduces some applications of electro-mechanical devices, particularly in aircraft systems. Then it discuss the classical control system analysis; mathematical model, time response analysis, root-locus technique, computational tools, and controller's hardware.

REFERENCES:

1. Lyshevski, Sergey Edward, *Electromechanical Systems, Electric Machines, And Applied Mechatronics*, CRC Press, 2000.
2. Busch-Vishniac, *Electromechanical Sensor And Actuators*, Springer, 1999.
3. Norman S. Nise, "Control Systems Engineering", John Wiley & Sons, 2004.
4. Ogata, K., *Modern Control Engineering*, Prentice-Hall, 2000.
5. Dorf R.C. and Bishop R.H., *Modern Control Systems*, Prentice Hall, 2004.
6. Franklin G.F., *Feedback Control of Dynamic Systems*, Pearson Higher Education, 2002.

BDU 20403 AIRCRAFT SYSTEMS (THEORY)

PRE-REQUISITE INTRODUCTION TO AIRCRAFT

SYNOPSIS:

Aircraft is a complex product comprises of many subsystems which must meet customer's demands and operational lifecycle value requirements. This course adopts a holistic view of the aircraft as a system, covering: basic systems engineering; cost and weight estimation; safety and reliability; lifecycle topics and aircraft subsystems. A small group's project will analyze existing aircraft systems that include key design drivers and decisions, aircraft attributes and subsystems, and operational experience.

REFERENCES:

1. Moir, I., and A. Seabridge. (2001), *Aircraft Systems: Mechanical, Electrical, and Avionics Subsystems Integration*, AIAA Education Series.
2. Jackson, S., (1997), *Systems Engineering for Commercial Aircraft*, Ashgate.
3. Raymer, D. (1999), *Aircraft Design: A Conceptual Approach*, AIAA Education Series.
4. Stinton, D. (1998), *The Anatomy of the Airplane*, AIAA Education Series.
5. Newman, Richard L. (2001), *Cockpit Displays : Test and Evaluation*, Ashgate.
6. David Harris (2004), *Flight Instruments and Automatic Flight Control Systems*, Blackwell Science.
7. Lombardo, D.A (1998), *Aircraft Systems*, McGraw-Hill.

**BDU 28001 AERONAUTICAL ENGINEERING TECHNOLOGY
PRACTICE II**

**PRE-REQUISITE AERONAUTICAL ENGINEERING TECHNOLOGY
PRACTICE I**

SYNOPSIS:

This practical course is an introduction to Engine Maintenance and Servicing Module where students will be exposed to the operation, inspection, maintenance and trouble shooting of piston engine and turbine engine. This course includes a practical hands-on laboratory experience especially in piston type aircraft's engine and be acquainted to required forms.

REFERENCES:

1. Aubin, Bruce R., (2004), *Aircraft Maintenance : The Art and Science of Keeping Aircraft Safe*, SAE International, Warrendale.
2. Klein, Vladislav, (2006), *Aircraft System Identification: Theory and Practice*, American Institute of Aeronautics & Astronautics, Reston.
3. Mattingly, Jack D., (2005), *Elements of Gas Turbine Propulsion*, American Institute of Aeronautics.
4. John D. Anderson Jr., (2005), *Introduction to Flight*, McGraw-Hill.

**YEAR 2
SEMESTER II**

UQ* 1*1 CO-CURRICULUM II**

SYNOPSIS:

This course is the continuation of the Co-curriculum I. It also offers various options of co-curriculum activities for diploma and bachelor degree students. Three types of activities are offered; sport and recreation, clubs and associations and uniform-dressed teams.

UWA 20402 CREATIVITY AND INNOVATION

SYNOPSIS:

This course focuses on developing a creative person who will eventually think strategically, creatively and critically. The knowledge and skills acquired throughout the course will later be applied by the students in solving problems and making decisions in the future. In this course, students will be exposed to various creativity and problem solving techniques. Some of the skills that will be covered throughout the course are problem solving, techniques in creativity and techniques in innovation. Students will also be participating in exhibition and competition.

REFERENCES:

1. De Bono, E. (2003), *Serious Creativity 1 : Lateral Thinking Tools, Techniques and Application*, Allscript Books.
2. De Bono, E. (2003), *Serious Creativity 2 : Lateral Thinking Tools, Techniques and Application*, Allscript Books.
3. Bernacki, E. (2002), *Wow! That's a Great Idea!*, Prentice Hall.
4. Clegg B., Birch, P. (2002), *Crash Course in Creativity*, Kogan Page.
5. Ceserani, J., Greatwood, P. (2001), *Innovation and Creativity*, Creast Publishing House.
6. Lumsdaine, E., Lumsdaine, M. Shelnut, J. W. (1999), *Creative Problem Solving and Engineering Design*, McGraw-Hill.

UWA 10302 ISLAMIC AND ASIAN CIVILIZATION

SYNOPSIS:

This course provides an introduction to the human civilization; a relation between Malay, China, and India civilizations, Islam in Malay regions and its roles in building the Malaysia civilization, contemporary issues and globalization, and nation development process.

REFERENCES:

1. Aminuddin Ruskan al-Dawamy, (et.al), (1998), *Tamadun Islam & Melayu (TITAS1)*, Pusat Pengajian Islam dan Pembangunan Sosial, Skudai: Universiti Teknologi Malaysia.
2. Amir A.Rahman, (1990), *Pengantar Tamadun Islam*, Kuala Lumpur: Dewan Bahasa dan Pustaka.Mohd Taib Osman dll, Ensiklopedia Tamadun Melayu.
3. Azhar Hj. Mad Aros, (2001), *Tamadun Islam dan Tamadun Asia*, Kuala Lumpur. Penerbit Universiti Malaya.
4. Mahyuddin Hj. Yahaya, (1998) *Tamadun Islam*, Shah Alam: Penerbit Fajar Bakti Sdn Bhd.
5. Mohd Nasir Omar, (ed.), (1996), *Tamadun Islam dan Ideologi-ideologi Masa Kini*, Selangor: Penerbit Nadhi.

BDU 20503

MANAGEMENT AND PROFESSIONAL ETHIC

SYNOPSIS:

Introduction and exposure of the management and professional ethics, philosophy and theory of ethics, values in professional ethics, responsibility of servicing, obligation to clients and third party, obligation of profession, professionals rights, observation of behavior among the professionals and the issues regarding to the professionals ethics, theory of technology management.

REFERENCES:

1. Mike W. Martin, Roland Schinzinger, (2005) ,*Ethics In Engineering*, Mc Graw Hill.
2. Mohd Janib Johari, (2001), *Etika Profesional*, Penerbit UTM.
3. Mustafa Hj. Daud, (2001),*Etika Pengurusan* , Utusan Publication.
4. Raymond Spier, (2001),*Ethic, Tools And The Engineer*, CRC Pres LLC.
5. Payne, Andrew C. (1996), *Management For Engineers*, John Wiley & Sons.

BDU 20603

FLIGHT MECHANICS (THEORY)

SYNOPSIS:

Flight mechanics is the course dealing with aircraft performance, its stability and control. This course emphasizes on fixed-wing aircraft flying in atmosphere. The content includes introduction to flight mechanics, overview of aerodynamics, overview of propulsion, aircraft performance, level flight, gliding and landing and aircraft controls and maneuverability.

REFERENCES:

1. Kermode, A. C. (2006), *Mechanics of Flight*, Pearson Education Limited.
2. Phillips W. F. (2004), *Mechanics of Flight*, John Wiley & Sons.
3. John D. Anderson Jr., (2005), *Introduction to Flight*, McGraw-Hill.

4. Raol, Jitendra R. (2009), *Flight Mechanics Modeling And Analysis*, CRC Press.
5. John D. Anderson Jr., (1999), *Aircraft Performance and Design*, McGraw-Hill.

BDU 20703 AIRCRAFT DESIGN

**PRE-REQUISITE AIRCRAFT STRUCTURE
ENGINEERING TECHNOLOGY MATERIAL**

SYNOPSIS:

This is an introduction course that exposed students to the philosophy of aircraft design. Airplane conceptual design principles are developed to meet modern aerodynamic, propulsion, structural and performance specifications. The contents of the course will mainly discussed in detailed about several major topics in aircraft design process such as the aircraft parametric study, general arrangement drawing, aerodynamic study, flight performance analysis and wing loading distribution. Students were divided into groups and each group will be given different design task according to mission and requirement.

REFERENCES:

1. Raymer, D. P., (2006), *Aircraft Design: A Conceptual Approach*, American Institute of Aeronautics and Astronautics.
2. Stinton, D., (2001), *The Design Of The Aeroplane*, Blackwell Science.
3. Torenbeek, E., (1982), *Synthesis Of Subsonic Airplane Design : An Introduction To The Preliminary Design, Of Subsonic General Aviation And Transport Aircraft*, Delft University Press.
4. Roskam, J., (1997), *Airplane Design Part 1 to 8*, DARcorporation.
5. Abbott, I. H., Von Doenhoff, A.E, (1959), *Theory of Wing Sections: Including a Summary of Airfoil Data*, Dover Publications.
6. Douglas Aircraft Company, *USAF Data Compendium for Stability and Control (DATCOM) Part I-IV*, 1978.

BDU 29002 BACHELOR DEGREE PROJECT I

**PRE-REQUISITE ENGINEERING MECHANICS, THERMOFLUIDS
AIRCRAFT AERODYNAMICS (THEORY)**

SYNOPSIS:

Bachelor Degree Project I is a systematic practice in teaching and learning where it integrates all courses acquired in the engineering program. Given with a topic, students have to identify the problem, gather relevant information to the problem, and propose solution to the problem. In this course, students are required to handle research which may contain at

least one of the following: (1) research on phenomena, process, system, (2) designing, developing component, product, system, (3) software development, and (4) case study, surveying.

REFERENCES:

1. Pejabat Pengurusan Akademik, *Thesis Writing Directory Book*, Penerbit UTHM, 2004.
2. Pejabat Pengurusan Akademik, *Panduan Pelaksanaan Projek Sarjana Muda*, Penerbit UTHM, 2000.
3. Books, journal, articles, and other sources related to the research project.

**YEAR 2
SEMESTER III**

BDU 28106 INDUSTRIAL TRAINING

PRE-REQUISITE BACHELOR DEGREE PROJECT I

SYNOPSIS:

Students are required to perform industrial training as a trainee engineer in aeronautical engineering areas for 1 semester. They will be given tasks by the potential industries such as planning, management, designing, assessment, specialization and supervising aeronautical engineering project. At the end of this course, student's performance will be assessed by supervisors from Faculty and industry.

REFERENCES:

1. Industrial Training Committees, (2000), *Industrial Training's Log Book*, FKMP UTHM.

YEAR 3

**YEAR 3
SEMESTER I**

UWA 10103

**NATIONHOOD AND CURRENT DEVELOPMENT
OF MALAYSIA**

SYNOPSIS:

This course discusses the basic concept, formation and development of Malaysia. It includes the Malay Sultanate of Malacca Empire, imperialism and colonialism, patriotism and nationalism and independence and formation of Malaysia. Besides that, it also mentioned the constitution and government of Malaysia system, and national development policy. Other than that, role and responsibilities of citizens are enforce upon besides the success and challenges of Malaysia.

REFERENCES:

1. Ahmad Esa et.al, (2004), *Ikhtisar Sejarah Kenegaraan & Pembangunan Malaysia* , Muapakat Jaya Percetakan Sdn. Bhd.
2. Ahmad Esa dan Khairul Azman Mohd Suhaimy (2000), *Ikhtisar Sejarah Pembangunan Sosio Politik dan Ekonomi Malaysia* , Muapakat Jaya Percetakan Sdn. Bhd.
3. Mardiana Nordin dan Hasnah Hussiin (2000), *Pengajian Malaysia*, Penerbit Fajar Bakti Sdn. Bhd.
4. Nazaruddin Mohd Jali et.al, (2005), " *Pengajian Malaysia*" , Prentice Hall.

BDU 39004

BACHELOR DEGREE PROJECT II

SYNOPSIS:

Bachelor Degree Project II is the continuation of the Bachelor Degree Project I. It is an important mechanism in teaching and learning because it integrates all subjects acquired in engineering. This course will also develop the student's capability to present, discuss and analyze results of the research clearly, effectively and confidently in both oral presentation and in dissertation.

REFERENCES:

1. Pejabat Pengurusan Akademik, *Thesis Writing Directory Book*, Penerbit UTHM, 2004.
2. Pejabat Pengurusan Akademik, *Panduan Pelaksanaan Projek Sarjana Muda*, Penerbit UTHM, 2000.
3. Books, journal, articles, and other sources related to the research project.

REFERENCES:

1. Kementerian Pengajian Tinggi, (2007), *Asas Pembudayaan Keusahawanan*, Penerbit Universiti Utara Malaysia.
2. Marc J. Dollinger, (2003), *Entrepreneurship; Strategic and Resources*, Prentice Hall Pearson Malaysia Sdn. Bhd.
3. UiTM Entrepreneurship Study Group, (2004), *Fundamentals of Entrepreneurship*, Pearson Malaysia Sdn Bhd.
4. Ismail Faidah, (2004), *Strategi Pengurusan Kewangan, Perniagaan Kecil dan Sederhana*, Pearson Malaysia Sdn Bhd.
5. Rosnah M.S., (2007), *Teori Asas Ekonomi Kejuruteraan*, Penerbit UTHM.
6. UiTM Entrepreneurship Study Group (2004), *Fundamentals of Entrepreneurship*, Prentice Hall Pearson Malaysia Sdn. Bhd.

BPK 30902

ENGINEERING ECONOMY

SYNOPSIS:

Engineering economy is a field of study that considers several economic aspects in making engineering decisions, such as costing and the benefits of the proposed project. The basic considerations are time-money values and, compounding techniques, discounting, and equivalent concept. The profitable of an investment are determined by using several techniques such as PW, FW, AW, IRR, and cost-benefit method.

REFERENCES:

1. Kementerian Pengajian Tinggi, (2007), *Asas Pembudayaan Keusahawanan*, Penerbit Universiti Utara Malaysia.
2. Blank, L.T., A. Tarquin (2008), *Basics of Engineering Economy*, International ed., McGraw-Hill, New York.
3. Mohamad Sirin, R. (2007), *Teori Asas Ekonomi Kejuruteraan*, Fakulti Pengurusan Teknologi, KUiTTTHO, Malaysia.
4. W.G, Wicks E.M. & Luxhoj J.T, (2006), *Engineering Economy*, 13th Edition, Prentice Hall Inc.
5. Chan S. Park, (2007), *Contemporary Engineering Economics*, 4th Edition, Pearson International Edition.

YEAR 3
SEMESTER II

BDT 30102

PPL GROUND SCHOOL

SYNOPSIS:

This course consists of three modules which are aircraft technical knowledge, radio telephony, basic navigation and meteorology. In aircraft technical module, students will study; properties of air, principles of flight, flight control mechanism, aircraft engine operation, aircraft systems, loading and performance, airworthiness and structural limitation. In radio telephony module, the topics are; radio telephony practices, standard phrases procedures, mandatory messages, emergency messages and the technique of transmitting using aircraft radio aids. Student will also learn to perform radio communication with air traffic control tower. In flight navigation module, students will learn map reading and plotting, and flight planning. Student will also learn basic meteorology knowledge where the topics are ranging from atmosphere properties to introduction of weather forecast documents and warnings

REFERENCES:

1. Safety Regulation Group, (2009), *CAP 413 Radio Telephony Manual-Pilot's Manual*, Vol 5. Radio Navigation. United Kingdom Civil Aviation Authority.
2. ICAO Annex 10, (2000), *Communication Procedures, ICAO Radio Guide*, Vol.2, APFT Training Manual.
3. Trevor, T., (2001), *Air Pilot's Manual- Aero Technical*, Air Pilot Publishing.
4. Oxford Aviation Training, (2005), *Oxford ATPL Manual*, Vol 1-14, Oxford Aviation Publication.
5. Trevor, T., (2001). *Air Pilot's Manual-Aviation Law & Meteorology*, 4th Edition. Air Pilot Publishing.
6. Trevor, T., (2001), *Air Pilot's Manual-Air Navigation*, 4th Edition. Air Pilot Publishing.

BDT 30202

AIR LAW

SYNOPSIS:

This course will cover in detail topics related to aviation air law such as Malaysia Civil Air Regulations 1996 (MCAIR), airworthiness of aircraft, aircraft nationality and registration, personnel licensing, rules of the air, procedures for air navigation - aircraft operations, air traffic services, aeronautical information service, aerodromes, facilitation, search and rescue, security, aircraft accident investigation and transport of dangerous goods by air.

REFERENCES:

1. *Civil Aviation Act 1969*, Laws of Malaysia.

2. *Civil Regulation Act 1996*. Laws of Malaysia.

BDT 30302

HUMAN PERFORMANCE AND LIMITATIONS

SYNOPSIS:

This course will cover topics related to human performance and limitations such as basic aviation physiology and health maintenance, aviation psychology, stress management, social psychology and ergonomics of flight deck.

REFERENCES:

1. Godwin, P., (2006), *Air Pilot's Manual- Human Factors and Pilot Performance*. 3rd Edition, Air Pilot Publishing,
2. Oxford Aviation Training, *ATPL Manual: Vol 1-14*, Oxford Aviation Publication, 2005.
3. Campbell, R.D, Bagshaw, M., (2002), *Human Performance and Limitations in Aviation*, 3rd Edition. Wiley Blackwell
4. Jeppesen and Atlantic Flight Training, (2007), *JAA ATPL Training: Human Performance and Limitations*, 2nd edition, Jeppesen Publication.

BDT 30402

FLIGHT MECHANICS (PRACTICAL)

SYNOPSIS:

This course is intended to provide an understanding on the aerofoil and wing terminology, principles of airflow, lift and drag, stall and spin, flight controls, maneuvers, stability, propellers, aerodynamic limitations and performance degradation.

REFERENCES:

1. E. L. Houghton, P. W. Carpenter, *Aerodynamics for Engineering Students*, Fifth Edition, 5th Edition, Butterworth-Heinemann, 2003.
2. Chris Carpenter, *Flightwise: Principles of Aircraft Flight*, Airline Publishing Ltd., 2002.
3. R.B. Underdown, *Ground Studies for Pilots: Navigation*, 6th Edition, 2001.
4. A. C. Kermode, *Mechanics of Flight*, 11th Edition, Pearson Education Limited, England, 2006.

BDT 30501

AIRCRAFT ELECTRICAL SYSTEMS

SYNOPSIS:

This course will cover topics on principles, operation and handling of aircraft electrical systems. This course emphasizes on direct current, alternating current, semiconductors, logic circuits and electronics display systems.

REFERENCES:

1. Oxford Aviation Training, *ATPL Training Manual 3: Aircraft General Knowledge 2 - Electrics & Electronics*, 4th Edition, Oxford Aviation Publications, 2009.
2. J.E. Bygate, *Aircraft Electrical System: Single and Twin Engine*, Jeppesen Sanderson, 1990.
3. David Robson, *Aerodynamics, Engines and Systems for the Professional Pilot*, Airlife Publishing, 2002.
4. E.H.J. Pallet, *Aircraft Electrical Systems*, Prentice Hall, 1997.

BDT 30602

AIRCRAFT SYSTEMS (PRACTICAL)

SYNOPSIS:

This course will cover various topics on airframe systems which include hydraulic, pneumatic, fuel systems, ice and rain protection, landing gear and wheel brake systems, and emergency equipment.

REFERENCES:

1. ATPL Training, *Powerplant: Airframes & Systems*, Jeppesen and Atlantic Flight Training.
2. David Robson, *Aerodynamics, Engines and Systems for the Professional Pilot*, Air Pilot Publishing, 2007.
3. Oxford Aviation Training, *Aircraft General Knowledge (Aircraft System)*, Oxford Aviation Publication, 2004.
4. Oxford Aviation Training, *JAA ATPL Training Textbook (4) Airframes & Systems*, Oxford Aviation Publication, 2004.
5. Oxford Aviation Training, *ATPL Manual 2: Aircraft General Knowledge Part 1*, 4th Edition, Oxford Aviation Publication, 2004.
6. FAA, *FAA Pilot Handbook of Aeronautical Knowledge*, US Department of Transportation, 2008.

BDT 30702

AIRCRAFT PROPULSION SYSTEMS (PRACTICAL)

SYNOPSIS:

This course will cover topics on the principles, operation and handling of aircraft power plant. Two types of aircraft engine which are piston engine and turbine engine will be discussed.

REFERENCES:

1. Jeppesen, *ATPL Training: Powerplant: Airframes & Systems*, Jeppesen Publications, 2007.
2. David Robson, *Aerodynamics, Engines and Systems for the Professional Pilot*, Air Pilot Publishing, 2007.
3. Oxford Aviation Training, *Aircraft General Knowledge (Aircraft System)*, Oxford Aviation Publication, 2004.
4. Oxford Aviation Training, *ATPL Manual 4: Aircraft*, Oxford Aviation Publication, 2004.
5. FAA, *FAA Pilot Handbook of Aeronautical Knowledge*, US Department of Transportation, 2008.

BDT 30802

PPL FLYING

SYNOPSIS:

This course will cover the necessary basic aeronautical knowledge (ground school lessons and single engine (SE) flying in accordance to the requirement of DCAM to enable the students to sit for the Private Pilot License (PPL) examinations. The knowledge includes general handling (day), navigation, instrument flying and flight test. Student have to accumulate at least 45 flying hours on a single-engine aircraft.

REFERENCES:

1. Trevor T. (2001), *Air Pilot's Manual: Aviation Law & Meteorology*, Air Pilot Publishing.
2. *Civil Aviation Act 1969*, Laws of Malaysia.
3. *Civil Aviation Regulations 1996*, Laws of Malaysia.
4. DCAM, *Aeronautical Information Publication*, Department Civil Aviation Malaysia Publication, 2007.

**YEAR 3
SEMESTER III**

BDT 30903 CPL FLYING I

SYNOPSIS:

This course will cover exercises on general handling (day), instrument flying, and navigation. These exercises will impose student to complete all manoeuvres with smoothness and accuracy where good judgement and airmanship are applied. Student have to accumulate at least 45 flying hours on a single-engine aircraft.

REFERENCES:

1. Fletcher Anderson, *Flying The Mountains: A Training Manual Flying Single-Engine Aircraft*, McGraw-Hill, New York, 2003.
2. David Blatner, *The Flying Book: Everything You've Ever Wondered About Flying On Airlines*, Penguin Books, New York, 2003.
3. *Civil Aviation Act 1969*, Laws of Malaysia.
4. *Civil Aviation Regulations 1996*, Laws of Malaysia.
5. DCAM, *Aeronautical Information Publication*, Department Civil Aviation Malaysia Publication, 2007.

YEAR 4

**YEAR 4
SEMESTER I**

BDT 40102 CPL FLYING II

PRE-REQUISITE CPL FLYING I

SYNOPSIS:

This course is the extension of CPL Flying I for exercise in general handling (day & night), instrument flying and navigation. This exercise will impose student to complete all manoeuvres with smoothness and accuracy where good judgement and airmanship are applied. Student have to accumulate at least 35 flying hours on a single-engine aircraft.

REFERENCES:

1. Fletcher Anderson, *Flying The Mountains : A Training Manual Flying Single-Engine Aircraft*, McGraw-Hill, New York, 2003
2. David Blatner, *The Flying Book: Everything You've Ever Wondered About Flying On Airlines*, Penguin Books, New York, 2003
3. *Civil Aviation Act 1969*, Laws of Malaysia.
4. *Civil Aviation Regulations 1996*, Laws of Malaysia.
5. DCAM, *eronautical Information Publication*, Department Civil Aviation Malaysia Publication, 2007.

BDT 40202 RADIO AIDS

SYNOPSIS:

This course covers several topics related to air law such as electro magnetic radiation, basic transmitter, antennas, modulation of radio waves, wave propagation, radio communications, ground d/f, adf/ndb, vor (conventional and doppler), ILS, MLS, basic radar principles, DME, VOR/DME area navigation (RNAV), SSR, ground radar, airborne weather radar, doppler, radio altimeter, ground proximity warning system (GPWS), hyperbolic navigation systems, Decca navigation system, Loran-c, very low frequency systems (omega and VLF), satellite assisted navigation and traffic collision avoidance system.

REFERENCES:

1. Oxford Aviation Training , *JAA ATPL Navigations II - Radio Aids*, Oxford Aviation Publication, 2006.
2. Litton Aero, *Fundamentals of Inertial Navigation*, Litton Aero Publication, 1975.
3. RB Underdow, *Ground Studies for Pilot. Vol 1: Radio Aids*, Blackwell.
4. B. Icendall, *Manual of Avionics: Introduction to the Electronics of Civil Aviation*, Granada

5. RD. Campbell, *Instrument Flying, Radio Navigation and Instrument Approach Procedures*, Granada.

BDT 40302 FLIGHT PLANNING

SYNOPSIS:

This course will cover topics related to flight planning such as fuel planning and payload calculation as a preparation for CAA-6 examination papers conducted by Civil Aviation Authority (CAA), UK. This course also introduces students to the CA48 and ICAO flight plan requirements before performing their flying practices.

REFERENCES:

1. Jeppesen, *Flight Planning*, Atlantic Flight Training, 2005.
2. Oxford Aviation Training., *Ground Studies for Pilots Vol 2: Plotting & Flight Planning*, Oxford Aviation Publication, 2006.
3. UKCAA, *CAP 697-CAA-JAR FCL Examinations Flight Planning Manual*, UKCAA Publication, 2004.
4. UKCAA, *CAP 698-CAA-JAR FCL Examinations Flight Planning Manual*, UKCAA Publication, 2004.
5. Oxford Aviation Training, *Performance & Planning I*, Oxford Aviation Publication, 2005.
6. Oxford Aviation Training, *Performance & Planning II*, Oxford Aviation Publication, 2005.

BDT 40402 ADVANCED METEOROLOGY (THEORY)

SYNOPSIS:

This course is designed for student to understand and apply the basic weather concepts to flight planning and in-flight operations. The course contains atmospheric circulation patterns plus resultant weather systems with detailed analysis of weather reports. The weather forecasts will guide the pilot's flight planning and decision making with respect to flight operations.

REFERENCES:

1. Trevor T., *Air Pilot's Manual: Aviation Law & Meteorology*, Air Pilot Publishing, 2001.
2. *Malaysia Civil Aviation Act 1969*.
3. *Malaysia Civil Aviation Regulations 1996*.
4. DCAM, *Aeronautical Information Publication*, Department Civil Aviation Malaysia Publication, 2007.

REFERENCES:

1. David Cockburn, *Navigation*, Pooleys, 1996.
2. Dale Re Remer, *Global Navigation for Pilots*, ASA, 1998.
3. Oxford Aviation Training, *Navigation I-General Navigation*, Oxford Aviation Publication, 2005.
4. UKCAA, *Air Lamanac (AP 1602)*, UKCAA Publications, 2005.
5. RB Underdown, *Ground Studies for Pilots Vol 2: Plotting and Flight Planning, Vol 3: Navigation General*, Blackwell, 1997.
6. Pewte Hawkins, *Maps and Compass*, Cicerone, 2004.

YEAR 4
SEMESTER II

BDT 40803 **CPL FLYING III**

PRE-REQUISITE **CPL FLYING II**

SYNOPSIS:

This course is the extension of CPL Flying II for exercise in General Handling (Day & Night), Instrument Flying and Navigation. This exercise will impose student to complete all manoeuvres with smoothness and accuracy where good judgement and airmanship are applied. Student have to accumulate at least 20 flying hours on each single-engine aircraft and simulator respectively.

REFERENCES:

1. Fletcher Anderson, *Flying The Mountains: A Training Manual Flying Single-Engine Aircraft*, McGraw-Hill, New York, 2003.
2. David Blatner, *The Flying Book: Everything You've Ever Wondered About Flying On Airlines*, Penguin Books, New York, 2003.
3. *Civil Aviation Act 1969*, Laws of Malaysia
4. *Civil Aviation Regulations 1996*, Laws of Malaysia.
5. DCAM, *Aeronautical Information Publication*, Department Civil Aviation Malaysia Publication, 2007.

BDT 40903 **AIRCRAFT PERFORMANCE APPLICATION**

SYNOPSIS:

This course will cover topics related to the performance of an aircraft such as the basis principle of aircraft performance, schedule the performance data and understanding of derivation and legislation for the provision of flight safety. Students also should know and adhere all the performance of aeroplanes certificated under performance groups A and B MCAR 1996 as a preparation for CAA-2 examination papers conducted by the United Kingdom Civil Aviation Authority (UKCAA).

REFERENCES:

1. David Cockburn, *Flight Performance & Planning*, Pooleys, 2006.
2. Oxford Aviation Training., *Performance & Planning I*, Oxford Aviation Publication, 2005.
3. Oxford Aviation Training., *Performance and Planning II*, Oxford Aviation Publication, 2005.

BDT 41003

MASS AND BALANCE

SYNOPSIS:

This course will cover topics related to the determination of aircraft load, mass and balance, and center of gravity. The course is to prepare students for the CAA2-papers examination that is conducted by the United Kingdom Civil Aviation Authority (UKCAA). Students will also learn the techniques and procedures to check of the aircraft load and trim it using both computer and manual calculation.

REFERENCES:

1. Trevor T., *Ground Studies for Pilots*, Air Pilot Publishing, 2001.
2. APFT, *Load and Balance*, APFT Publication, 2006.
3. Oxford Aviation Training., *Aeroplanes: Airframes and Systems, Instruments, Mass and Balance*, Oxford Aviation Publication, 2007.

BDU 40103

AVIATION ENGLISH

SYNOPSIS:

The course contains questions, new vocabulary, reading and listening paragraphs, grammar items, and pronunciation exercises to improve speaking skills. Besides that, students will have reading comprehension quiz questions with feedback, listening comprehension quiz questions with feedback, grammar quiz questions with feedback, and ATC quiz questions with feedback.

REFERENCES:

1. Fletcher Anderson, *Aviation english : For ICAO Compliance*, Mcmillan, 2008.
2. Henry Emery, *Aviation English*, Mcmillan, 2008.
3. Sue Ellis and Terence Gerighty, *English for Aviation Student*, Oxford University Press, 2008.
4. Henry Emery and Andy Roberts, *Aviation English Class Audio CD*, McMillan, 2008.
5. Liz Mariner, *Cleared for Takeoff: English for Pilot*, AE Link Publications, 2007.

YEAR 4
SEMESTER III

BDT 41102 ATPL FLYING

PRE-REQUISITE CPL FLYING III

SYNOPSIS:

This course will cover exercises on general handling, instrument flying, night flying, airways check and simulator. These exercises are to enable students to have extensive knowledge of the IFR procedures in controlled and uncontrolled airspace, fuel planning, PNR, range and endurance cruise altitudes, all emergency procedures including asymmetric flying and engine failure. Students have to accumulate at least 25 and 10 flying hours on twin-engine aircraft and simulator respectively.

REFERENCES:

1. Fletcher Anderson, *Flying The Mountains : A Training Manual Flying Single-Engine Aircraft*, McGraw-Hill, 2003.
2. David Blatner, *The Flying Book : Everything You've Ever Wondered About Flying On Airlines*, Penguin Books, 2003.
3. *Malaysia Civil Aviation Act 1969*.
4. *Malaysia Civil Aviation Regulations 1996*.
5. DCAM, *Aeronautical Information Publication*, Department Civil Aviation Malaysia Publication, 2007.