Curriculum Structure

Table 1. Curriculum Structure for Bachelor of Electronic Engineering Technology (Communication and Computer) with Honours.

Year	Semester	Course Code	Course Name	Credit	Total
1	I	UQI 10102 / UQI 10202	Islamic Studies / Morale Studies	2	18
		UQU 10103 / UQU 10303	Nationhood and Current Development of Malaysia* / Malaysian Studies and Culture**	3	
		UQ* 1**01	Co-Curriculum I	1	
		UHB10102	Essential Academic English	HW(2)	
		BWM 12203	Mathematics for Engineering Technology I	3	
		BNR 15002	Creativity and Innovation	2	
		BNR 22502	Occupational Safety and Health	2	
		BNR 10203	Electrical Principles II	3	
		BNR 13402	Electrical Laboratory I	2	
	II	UQI 11202	Falsafah dan Isu Semasa	2	18
		UQU 10702 / UWB 11002	Penghayatan Etika dan Peradaban * / Malay Language**	2	
		UQ* 1**01	Co-Curriculum II	1	
		UWB 10*02	Foreign Language	2	
		BWM 12303	Mathematics for Engineering Technology II	3	
		BNR 17003	Engineering Mechanics	3	
		BNR 10303	Electrical Principles II	3	
		BNR 23502	Electrical Laboratory II	2	
2	I	UHB 20102	Essential Academic English	2	19
		BWM 22502	Statistic for Engineering Technology	2	
		BNR 20803	Computer Programming	3	
		BNR 20903	Electronic Communication System	3	
		BNR 27103	Electronic Principles I	3	
		BNR 27302	Measurement and Instrumentation	2	
		BNF 36002	Signal and System	2	
		BNF 31802	Computer Architecture	2	
	II	BNR 26002	Entrepreneurship	2	19
		BNR 20603	Electromagnetic Technology	3	
		BNR 21703	Microprocessor and Microcontroller	3	
		BNF 22202	Multimedia Technology	3	
		BNR 25403	Digital Electronics	2	
		BNR 27203	Electronic Principles II	3	
		BNR 27403	Computer Aided Design (CAD)	3	
3	I	UHB 30102	English for Technical Purposes	2	19
		BNR 36502	Engineering Economy	2	
		BNR 37502	Control System	2	
		BNR 37602	Technology Design Project	2	
		BNF 32203	Computer Network	3	
		BNF 36103	Digital Communication	3	
		BNF 32402	Computer Network Laboratory	2	
		BNF 46103	Embedded System and Applications	3	
	II	BNR 32803	Bachelor Degree Project I	3	19
		BNR 37703	Management and Professional Ethics	3	
		BNF 32303	Operating System	3	
		BNF 32102	Communication System Laboratory	2	
		BNF 43103	Fiber Optic Technology	3	
		BNF 43002	Cellular Communication Technology	3	
		BNF 4***3	Elective 1	2	
4	I	UHB 40102	English for Occupational Purposes	2	16
		BNF 44003	Microwave, Antenna and Propagation Technology	3	
		BN* 4***3	Elective 2	3	
		BN* 4***3	Elective 3	3	
		BNR 43505	Bachelor Degree Project II	5	

II	BNR 46112	Industrial Training	12	12
Total Credits				**140**

*   *Local student only* (Pelajar tempatan sahaja)
**   *International student only* (Pelajar antarabangsa sahaja)

Elective Courses

Elective	Course Code	Course Name	Credit
Elective 1	BNF 44403	Internet of Things and Applications (IOT)	3
	BNF 43203	Computer and Data Security	3
Elective 2	BNF 44203	Digital Design Technology	3
	BNF 44503	Advanced Communication Technology	3
Elective 3	BNF 43603	Artificial Intelligence	3
	BND 46403	Industrial Revolution 4.0 (IR4.0)	3
	BNE 44303	Energy Efficient and Management	3
	B** ***03	Open Elective	3

Courses Synopsis

UQI 10102 Islamic Studies

Synopsis

Kursus ini menerangkan tentang konsep Islam sebagai al-Deen. Skop perbincangannya meliputi pengajian al-Quran dan al-Hadith; Akidah Ahli Sunnah wal Jamaah; aliran pemikiran akidah; perkembangan mazhab Fiqh; prinsip muamalat; Undang- undang Jenayah Islam; etika kerja dalam Islam; isu-isu dalam Undang-undang kekeluargaan Islam serta isu-isu semasa.

References

1. Harun Din (Dr.) (2001), *Manusia Dan Islam,* cetakan pertama, Kuala Lumpur: Dewan Bahasa dan Pustaka. (BP174 .M36 1990)
2. Ismail Haji Ali, (1995), *Pengertian dan Pegangan Iktikad yang benar: Ahli Sunnah Wal Jamaah:* Kuala Lumpur: Penerbitan al-Hidayah. (BP166.78 .P46 1995)
3. Mustafa Abdul Rahman (1998), *Hadith 40*, Kuala Lumpur: Dewan Pustaka Fajar. (BP135. A2 .M87 1998)
4. Mustafa Haji Daud (1989), *Institusi Kekeluargaan Islam,* Kuala Lumpur: Dewan Pustaka dan Bahasa. (BP188.3.F3. M87 1989)
5. Paizah Haji Ismail (1991), *Undang-undang Jenayah Islam*, Kuala Lumpur: Dewan Pustaka Islam, Angkatan Belia Islam Malaysia. (BP144 .P35 1991)

UQI 10202 Moral Studies

Synopsis

Kursus ini menerangkan tentang pengenalan kepada konsep moral, aspek-aspek moral dan kepentingannya dalam kehidupan seharian. Teori moral Barat serta nilai- nilai murni agama besar di dunia. Moral dalam pekerjaan dan akhirnya isu-isu moral semasa.

References

6. Eow Boon Hin. (2002). *Moral Education*. Longman. (LC268 .E48 2008)
7. Ahmad Khamis. (1999). *Etika Untuk Institusi Pengajian Tinggi*. Kuala Lumpur: Kumpulan Budiman. (LC315.M3 .A35 1999)
8. Mohd Nasir Omar. (1986). *Falsafah Akhlak*, Penerbit Universiti Kebangsaan Malaysia / 2010, Bangi. (BJ1291 .M524 2010).
9. Hussain Othman. (2009). *Wacana Asasi Agama dan Sains.*Batu. Pahat: Penerbit UTHM. (BL240.3 .H87 2009 a)
10. Hussain Othman, S.M. Dawilah Al-Edrus, Berhannudin M. Salleh, Abdullah Sulaiman, (2009). *PBL Untuk Pembangunan Komuniti Lestari.* Batu Pahat: Penerbit UTHM. (LB1027.42 .P76 2009)

UQU 10103 Malaysian Nationhood and Current Development

Synopsis

Kursus ini membincangkan konsep asas, proses pembentukan dan pembangunan Malaysia. Ia merangkumi Empayar Kesultanan Melayu Melaka, imperialism dan kolonialisme, patriotism dan nasionalisme serta seterusnya kemerdekaan dan penubuhan Malaysia. Selain itu, turut disentuh ialah perlembagaan dan sistem

kerajaan Malaysia serta dasar-dasar utama pembangunan negara. Antara lain,

peranan dan tanggungjawab warganegara juga ditekankan selain kejayaan dan cabaran Malaysia.

References

1. Zahrul Akmal Damin, Fauziah Ani, Lutfan Jaes, Khairunesa Isa, Siti Sarawati Johar, Harliana Halim, Khairul Azman Mohd Suhaimy, Shamsaadal Sholeh Saad, Ku Hasnan Ku Halim dan Mohd Akbal Abdullah (2009). *Kenegaraan & Pembangunan Malaysia*. Batu Pahat: Penerbit UTHM.
2. Nazaruddin Mohd Jali, Ma'rof Redzuan, Asnarulkhadi Abu Samah dan Ismail Mohd Rashid (2005). *Pengajian Malaysia*. Petaling Jaya: Prentice Hall. (DS596.6 .P46 2001 N2)
3. Ruslan Zainudin, Mohd Mahadee Ismail dan Zaini Othman (2005). *Kenegaraan Malaysia*. Shah Alam: Fajar Bakti. (JQ715 .R87 2005)
4. Mohd. Ashraf Ibrahim (2004). *Gagasan Bangsa Malayan yang Bersatu* 1945-57. Bangi: Penerbit UKM. (DS597 .M37 2004)
5. Noor Aziah Mohd. Awal (2003). *Pengenalan kepada Sistem Perundangan di Malaysia*. Petaling Jaya: International Law Book Services. (KPG68 .N66 2003)
6. Andaya, B.W. and Andaya, L.Y. (1982). *A History of Malaysia*. London: Macmillan. (DS596 .A52 2001)
7. Abdul Aziz Bari (2002). *Majlis Raja-Raja*. Kuala Lumpur : Dewan Bahasa dan Pustaka. (JQ1062.A58 .A39 2002)
8. Aziz Deraman (1992). *Tamadun Melayu dan Pembinaan Bangsa Malaysia*. Kuala Lumpur: Arena Ilmu Sdn. Bhd. (HN700.6 .A952 2000)

UQU 10303 Malaysian Studies and Culture

Synopsis

This course will provide students in basic understanding of Malaysia from various perspectives. Topics to be discussed include Malaysia in relation to its history, achievement and international affairs. In addition, students will also be exposed to the ethnic composition of the country, culture and heritage. Teaching and learning process enables student to acquire knowledge and appreciates the reality of life in Malaysia through experiential learning.

References

1. Abdul Halim Nasir (2004). "Mosque Architecture in the Malay World." Bangi : Penerbit Universiti Kebangsaan Malaysia. (NA4670 .A23 2004)
2. Andaya, B.W. and Andaya, L. Y. (1982). "A History of Malaysia." London: Macmillan. (DS596 .A52 2001)
3. Nazaruddin Mohd. Jali (2003). "Malaysian Studies : Nationhood and Citizenship." Petaling Jaya : Pearson Prentice Hall.
4. Yahaya Ismail (1989). "The Cultural Heritage of Malaysia." Kuala Lumpur : Dinamika Kreatif Sdn. Bhd.
5. Francis Loh kok Wah dan Khoo Boo Teik (2002). Democracy in Malaysia. Cornwall: Curzon Press
6. Khoo Kay Kim (2001). "Malay Society : Tranformation and Democratisation." Kelana Jaya : Pelanduk Publications
7. Mohamed Noordin Sopiee (1974). "From Malayan Union to Singapore Separation, Political Unification in the Malaysian Region, 1945-65." Kuala Lumpur: University of Malaya Press. (DS597 .M56 2005)

UQI 11202 Falsafah dan Isu Semasa

Synopsis

Kursus merangkumi hubungan ilmu falsafah dengan Falsafah Pendidikan Kebangsaan dan Rukunegara. Penggunaan falsafah sebagai alat untuk memurnikan budaya pemikiran dalam kehidupan melalui seni dan kaedah berfikir serta konsep insan. Topik utama dalam falsafah iaitu epistemologi, metafizik dan etika dibincangkan dalam konteks isu semasa. Penekanan diberi kepada falsafah sebagai asas bagi menjalin dialog antara budaya serta memupuk nilai sepunya. Di hujung kursus ini pelajar akan mampu melihat disiplin-disiplin ilmu sebagai satu badan ilmu yang komprehensif dan terkait antara satu sama lain.

References

1. Al-Attas, S.M. Naquib. (1991). The Concept of Education in Islam. Kuala Lumpur: ISTAC.
2. Al-Farugi, I.R. (1994). Al-Tawhid: Its Implications for Thought and Life, (2nd Ed.). Herndon: IIIT.
3. Phillips, D.C. (Ed.) (2014). Encyclopaedia of Educational Theory and Philosophy, (1st Ed.). SAGE Publication.
4. Dzulkifli, A.R. & Rosnani, H. (2019) Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020. Kuala Lumpur: IIUM Press.
5. Hospers, J. (1997). An Introduction to Philosophical Analysis, (4th Ed.). London: Routledge.
6. Mitchell, H.B. (2011). Roots of Wisdom: A Tapestry of Philosophical Traditions, (6th Ed.). Wadsworth: Cengage Learning.
7. Osman Bakar. (1999). The Classification of Knowledge in Islam. Cambridge, U.K.: The Islamic Texts Society.
8. Rosnani Hashim. (2017). Revitalization of Philosophy and Philosophical Inquiry in Muslim Education. Kull of Education, IIUM.

UQU 10702 Penghayatan Etika dan Peradaban

Synopsis

Kursus ini menerangkan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenalpasti sistem, tahap perkembangan, kemajuan dan kebudayaan sesuatu bangsa dalam mengukuhkan kesepaduan sosial. Selain itu, perbincangan berkaitan isu-isu kontemporari dalam aspek ekonomi, politik, sosial, budaya dan alam sekitar daripada perspektif etika dan peradaban dapat melahirkan pelajar yang bermoral dan professional. Penerapan amalan pendidikan berimpak tinggi (HIEPs) yang bersesuaian digunakan dalam penyampaian kursus ini. Di hujung kursus ini pelajar akan dapat menghubungkaitkan etika dan kewarganegaraan berminda sivik.

References

1. Shamsul Amri Baharuddin. (2012). Modul Hubungan Etnik Edisi Dua. Bangi: Institut Kajian Etnik. Universiti Kebangsaan Malaysia. [DS595 .M62 2007].
2. Wan Hashim Wan Teh. (2011). Hubungan Etnik di Malaysia. Kuala Lumpur: ITNM. [DS595.W36 2011].
3. Zaid Ahmad. (2010). Hubungan Etnik di Malaysia. Oxford Fajar: Shah Alam. [DS595 .H822010].
4. Tarikh kuatkuasa
5. Mohd. Ashraf Ibrahim. (2004).Gagasan Bangsa Malayan yang Bersatu 1945-57. Bangi : Penerbit UKM. [DS597.M37 2004]

6. Noor Aziah Mohd. Awal. (2003). Pengenalan kepada Sistem Perundangan di Malaysia. Petaling Jaya: International Law Book Services. [KPG68.N66 2003]

UWB 10602 French

Synopsis

This course is designed for students to learn basic French. Students are exposed to listening, reading, speaking, and writing skills with basic vocabulary, grammar and sentence structure. Students are also exposed to real daily situations which will help them to communicate using French.

References

1. Booth, Trudie Maria, 2008. *French Verbs Tenses*. McGraw-Hill.   No. panggilan: PC 2271, U66 2008.
2. Heminway, Annie, 2008. *Complete French Grammar*. McGraw-Hill. No. panggilan: PC2112, H45 2008
3. Price, Glanville, 2003. *A Comprehensive French Grammar*. Blackwell Publishing. No. panggilan: PC2112. P74, 2003.
4. Hatier, 1995. *Le Nouveau Bescherelle Complete Guide 12 000 French Verbs*. Paris: Librairie Hatier.
5. Kaneman-Pougatch, Massia et al, 1997. *Méthod de français: Café Crème 1*. Paris: Hachette F.L.E.
6. Grégoir, Maïa et al, 1995. *Grammaire Progressive du Français* avec 500 exercices. Paris: CLE International.
7. Miquel, Claire Leroy et al, 1995. *Vocabulaire Progressive du Français* avec 250 exercices. Paris: CLE International.
8. Capelle, Guy et Gidon, Noëlle, 1995. *Méthod de français: Le Nouvel Espaces 1*. Paris: Hachette F.L.E.
9. Hatier. 2002. *Le Nouveau Bescherelle12,000 French Verbs.* English ed. Paris: Librairie Hatier.
10. French Dictionary 1999. *The New Collins Robert 5*[th] ed. Paris: Harper Collins Publishers.

UWB 10702 German

Synopsis

This course is designed for students to learn basic German. Students are exposed to listening, reading, speaking, and writing skills with basic vocabulary, grammar and sentence structure. Students are also exposed to real daily situations which will help them to communicate using German.

References

1. Astrid Henschel, 2006. *German Verb Tenses.* New York : McGraw-Hill. (PF3301. H46 2006)
2. Gabriele Kopp, Siegfried Büttner, 2004. *Planet 1: Deutsch für Jugendliche: Kursbuch.* Ismaning: Germany: Hueber Verlag. (PF3129. K664 2004)
3. Gabriele Kopp, Siegfried Büttner, 2004. *Planet 1: Deutsch für Jugendliche: Arbeitsbuch.*Ismaning: Germany: Hueber Verlag. (PF3129. K664 2004)
4. Heiner Schenke, 2004. *Basic German: a grammar and workbook.* London: Routledge. (PF3112.5. 35 2004)
5. Robert Di Donato 2004. *Deutsch, Na Klar!* Boston: McGraw-Hill. (PF3112. D36 2004)

UWB 10802 Japanese Language

Synopsis

This course is designed for students to learn basic Japanese. Students are exposed to listening, reading, speaking, and writing skills with basic vocabulary, grammar and sentence structure. Students are also exposed to real daily situations which will help them to communicate using Japanese.

References

1. Rosmahalil dan rakan-rakan, (2014): UWB10802: Hiragana Learning Module, Batu Pahat: Penerbit UTHM.
2. Siti Hajar Bidin dan rakan-rakan, (2016): Japanese Language Level 1 (UWB10802): Learning Module, Batu Pahat: Penerbit UTHM.
3. Rosmahalil Azrol Abdullah, (2008): Bahasa Jepun (UMJ 1312): Learning Module (2nd Edition), Batu Pahat: Penerbit UTHM. (PL539.3 .R67 2008a)
4. Surie, Network (2010): AE Minna no Nihongo 1-1 Elementary: Main Textbook, Tokyo: 3A Corporation. (TK7885.7 .V44 2000r)
5. Surie, Network (2009): AE Minna no Nihongo 1-1 Elementary: Translation and Grammatical Notes, Tokyo: 3A Corporation. (PL539.3 .M567 2009)
6. Surie, Network (2009): AE Minna no Nihongo 1-2 Elementary: Main Textbook, Tokyo: 3A Corporation. (PL539.3 .M569 2009)
7. Surie, Network (2010): AE Minna no Nihongo 1-2 Elementary: Translation and Grammatical Notes, Tokyo: 3A Corporation. (PL539.3 .M57 2010)
8. The AOTS, (1977): Shin Nihongo no Kiso: Japanese Kana Workbook, Tokyo: 3A Corporation. (PL539.3 .S54 1977)

UWB 10902 Mandarin Language

Synopsis

This course is designed for students to learn basic Mandarin. Students are exposed to the skills of listening, reading, speaking and writing with basic vocabulary, grammar and structure. Students are also exposed to real daily situations which will help them to communicate using Mandarin.dengan situasi harian sebenar yang membolehkan mereka berkomunikasi menggunakan Bahasa Mandarin mudah.

References

1. Lim Hong Swan, Yeoh Li Cheng, 2010. *Mandarin Made Easy Through English*. Batu Pahat: Penerbit UTHM. (PL1129.E5 .L554 2009 a)
2. Liping Jiang (2006). *Experiencing Chinese*. China: Higher Education Press. (PL1129.E5 .T59 2006)
3. Kang Yuhua (2005). *Conversational Chinese 301*. China: Beijing Language and Culture University Press. (PL1121.C5 .K36 2005)
4. Kang Yuhua (2007). *Conversational Chinese 301:Vol. 2*. China:Beijng Language and Culture University Press. (PL1121.C5 .K364 2007)
5. Liu Xun (2010). *New Practical Chinese Reader: Textbook*. China: Beijing Language and Culture University Press. (PL1129.E5 .L58 2010)

UWB 11002 Malay Language

Synopsis

This course is designed for students to learn basic Malay language. Students are

exposed to listening, reading, speaking, and writing skills with basic vocabulary,

grammar and sentence structure. Students are also exposed to real daily situations which will help them to communicate using Malay language.

References

1. Asmah Hj. Omar (1985). *Kamus Ayat* .Eastview. (PL5091 .A85 1985 rd)
2. Asmah Hj. Omar. (1993). *Susur Galur Bahasa Melayu*. DBP : KL. (PL5127 .A85 1993 N1)
3. Asmah Hj. Omar. (1993). *Nahu Melayu Mutakhir*. DBP : KL. (PL5137 .A85 1993)
4. Ainun Mohd.(2011). *Tesaurus Bahasa Melayu*. PTS Professional Publishing. (PL5123 . A364 2011)
5. Nik Safiah Karim (2008). *Tatabahasa Dewan*. DBP. (PL5108 .T37 2008 r)
6. Kamaruddin Saad. (2009). *105 karangan bahasa melayu UPSR*. Minerva Publishing. (PL 5108 KAM 2009)

UWB 11102 Spanish Language

Synopsis

This course is designed for students to learn the basic Spanish. Students are exposed to listening, reading, speaking, and writing skills with basic vocabulary, grammar and sentence structure. Students are also exposed to the real daily situations which will help them to communicate using Spanish.

References

1. Nurul Sabrina Zan, (2010). *Hola! Hablo español* First Edition Batu Pahat: Penerbit UTHM. (PC4445 .N72 2010 a)
2. Salina Husain, (2005). *Vamos a aprender español lengua extranjera* Batu Pahat: Penerbit UTHM. (PC4121 .S24 2005 a)
3. Bey, Vivienne (2004). *Spanish verbs drills*. Mc. Graw Hill. (PC4271 .B49 2004)
4. Terrell, Tracy D. (2003). *Dos mundos*. Mc. Graw Hill. (PC4129.E5 .D67 2003)
5. O'Connor, Niobe (2002). *Caminos 1*. Nelson Thornes. (PC4121 .O36 2002)
6. Vox modern Spanish and English dictionary: English-Spanish/Spanish-English (1986) National Textbook. Co. XX (131882.1)

UWB 11202 Arabic Language

Synopsis

This course is designed for students to learn basic Arabic. Students are exposed to listening, reading, speaking, and writing skills with basic vocabulary, grammar and sentence structure. Students are also exposed to real daily situations which will help them to communicate using Arabic.

References

1. Mohd Hisyam Abdul Rahim; Ahmad Sharifuddin Mustapha; Mohd Zain Mubarak. 2008. *Bahasa Arab UMR 1312*. Batu Pahat: Penerbit UTHM. (PJ6115 .M445 2008 a)
2. Mohd Hisyam bin Abdul Rahim. 2005. *Senang Berbahasa Arab*. Batu Pahat: Penerbit KUiTTHO. (PJ6115 .M44 2005 a)
3. Ab. Halim Mohammed; Rabiyah Hajimaming; Wan Muhammad Wan Sulong. 2007. *Bahasa Arab Permulaan*. Serdang: Penerbit UPM. (PJ6065 .A32

2007)
4. Fuad Ni'mat. 1973. *Mulakhass qawa'id al-lughatul 'arabiyyah*. Damsyik: Darul Hikmah. (PJ5161 .F62 1973)

5. Abdullah, Mustaffa Siti Rohaya Sarnap Siti Sujinah Sarnap. 2006. *Cara mudah belajar Bahasa Arab*. Singapore: Jahabersa. (PJ6106 .A22 2006)
6. Abu 'Amiir 'Izzat. 2008. *Kamus adik : bahasa Melayu-bahasa Inggeris-bahasa Arab*. Kuala Terengganu: Pustaka Darul Iman. (PJ6640 ABU 2008)
7. Mohd Azani Ghazali, Abdul Aziz Hassan @ Yahya. 2000. *Kamus ringkas Bahasa Melayu-Bahasa Arab*. Johor Bahru : Jahabersa. (PL5091.8 .A7 .M393 2000 rd)

UHB 10102 English For Higher Education

Synopsis

This course exposes students to English language learning in higher education and enhances their study skills. Students have opportunities to learn about using technological affordances in listening to lectures, note taking, library and internet research, conducting academic group discussions, preparing and delivering presentations, and writing an academic report. The course also provides opportunities for students to acquire learning skills that facilitate the transition to tertiary education. Aspects of English language oral and written skills that are most relevant to students in their academic work will be reinforced.

References
1. Agosti, M. (2008). Information access through search engines and digital libraries. Berlin: Springer. (Z699 .I534 2008)
2. Dunne, E. (1994). Talking and learning in groups. London: Routledge. (LC6519 .D86 1990 N1)
3. Fry, R. W. (1994). Take notes (2nd ed.). Hawthorne, NJ: Career Press. (LB2395.25 .F79 1994 n.1)
4. Galanes, G. J. (2013). Effective group discussion: Theory and practice (14th ed.). New York: McGraw-Hill. (HM736 .G34 2013)
5. Greasley, P. (2011). Doing essays and assignments: Essential tips for students. Thousand Oaks, CA: Sage Publication. (LB1047.3 .G73 2011)
6. Lim, P. L. (2014). Listening & notetaking skills 2 (4th ed.). Boston: National Geograohic Learning. (PE1128 .L55 2014)
7. Roguski, C. (1990). Academic mini-lectures: A text listening and note taking practice. USA: Heinle and Heinle Publisher. (PE1122 .R63 1990 N1)
8. Van Blerkom, D. L. (2005). College reading and study strategies. Belmont, CA: Wadsworth. (LB2395.3 .V36 2005)
9. Wong, L. (2012). Essential study skills (7th ed.). Boston, MA: Wadsworth Cengage Learning. (LB1049 .W66 2012)
10. Zhang, F. (2012). Computer-enhanced and mobile assisted language learning: Emerging issues and trends. Hershey, PA: Information Science Reference. (P53.28 .C65 2012)

UHB 20102 Essential Academic English

Synopsis

This course enhances students' English language skills, emphasising listening and reading skills necessary for academic contexts. The course provides opportunities for students to learn the strategies to help them understand information from documentaries, lectures and paper presentations and develop analytical listening to differentiate between facts and opinions. This course also provides opportunities for students to develop skills to critically respond to academic

materials such as journal articles.

References

1. Fairbairn, G. J. (2011). *Reading, writing and reasoning: A guide for students*. Maidenhead: Open University Press. (LB2395 .F34 2011)
2. Lewis, J. (2002). *Reading for academic success: Reading and strategies*. Boston: Houghton Mifflin. (LB2395.3 .L48 2002)
3. Mackay, I. (1995). *Listening skills* (2nd ed.). London: CIPD. (LB1065 .M32 1995)
4. Metcalfe, M. (2006). *Reading critically at university*. Los Angeles: Sage. (LB2395.3 .M47 2006)
5. Numrich, C.. (1995). *Consider the issues: Advanced listening and critical thinking skills* (2nd ed.). New York: Longman. (PE1128 .N85 1995 N2)
6. Shipside, S.. (2007). *Effective communication: Get your message across nd learn how to listen*. London: Dorling Kindersley. (HF5718 .S54 2007)
7. Smith, L. C. (2005). *Exploring content 1: Reading for academic success*. White Plains, NY: Longman. (PE1122 .S64 2004)
8. Wright, L. (2001). *Critical thinking: An introduction to analytical reading and reasoning*. Oxford: Oxford University Press. (B809.2 .W74 2001)

UHB 30102 English for Technical Purposes

Synopsis

This course aims to prepare students with the skills to write reports and express ideas or opinions competently. Students will be equipped with persuasive strategies that can be applied to writing technical reports. The course will also enable them to practise these techniques by drafting and collaborating to produce assigned tasks. The students are also expected to orally present their proposals and written reports before an audience or a panel of examiners.

References

1. Bogdan, R. C. (2007). *Qualitative research for education: An introduction to theory and methods* (5th Edition). Boston, MA: Pearson. (Call number: LB1028 .B63 2007)
2. Chandra, S. (2013). *Research methodology*. Oxford, U.K.: Alpha Science Intl Ltd. (Call number: H62 .C42 2013)
3. Grix, J. (2010). *Information skills: Finding and using the right resources*. New York: Palgrave Macmillan.
4. Farquhar, J. (2012). *Case study research for business*. London, England: Sage. (Call number: HD30.4 .F37 2012)
5. Hittleman, D. R. (2006). *Interpreting educational research: An introduction for consumers of research* (4th Edition). Upper Saddle River, NJ: Pearson. (Call number: LB1028 .H57 2006)
6. Newby, P. (2014). *Research methods for education* (2nd Edition). Abingdon: Routledge. (Call number: LB1028.N48 2014)
7. Neville, C. (2010). *The complete guide to referencing and avoiding plagiarism*. Maidenhead: Open University Press. (Call number: PN171.F56 .N48 2010)
8. Scruggs, T. E. (2006). *Applications of research methodology*. Oxford: Elsevier. (Call number: LC4704 .A66 2006)
9. Sekaran, U. (2013). *Research methods for business: A skill-building approach* (6th ed.). Chichester, West Sussex: Wiley. (Call number: HD30.4 .S44 2013) 10.Somekh, B. (2006). *Action research: a methodology for change and development*. Berkshire: Open University Press. (Call number: LB1028.24

.S65 2006)

UHB 40102 English for Occupational Purposes

Synopsis

This course employs a task-based learning approach and focuses on developing students' delivery of speech in oral interactions, job interviews and presentations. Particular emphasis will be given to promote the mastery of self-directed learning, team-work, research, oral presentations, reasoning and creativity. This course also enables students to acquire the knowledge and skills necessary for conducting and participating in meetings, which includes writing meeting documents and event proposals based on specific themes. Students will also be exposed to interview techniques.

References

1. Allen, J. G. (2004). *The complete Q and A job interview book* (4th Edition). Hoboken, NJ: John Wiley. (Call number: HF5549.5.I6 .A44 2004)
2. Badger, I. (2003). *Everyday business writing*. Essex: Pearson. (Call number: PE1115 .B327 2003)
3. Corfield, R. (2008). *Preparing the perfect job application: Application forms and letters made easy*. New Delhi: Kogan Page. (Call number: HF5383 .C67 2008)
4. Haynes, M. E. (2009). *Meeting skills for leaders: Make meetings more productive* (4th Edition). Rochester, NY: Axzo Press. (Call number: HD30.3 .H39 2009)
5. Leigh, J. (2004). *Successful CVs and job applications*. New York: Oxford University Press. (Call number: HF5383 .L44 2004)
6. Molinsky, S. J, & Bliss, B. (1994). *Day by day: English for employment communication* (1st Edition). Englewood Cliffs, NJ: Longman. (Call number: PE1128. M67 1994)
7. Peberdy, D. (2009). *Brilliant meetings: What to know, do and say to have fewer, better meetings*. Harlow: Prentice Hill. (Call number: HF5734.5 .P42 2009)
8. Wendleton, K. (2014). *Mastering the job interview and winning the game* (5th Edition). Boston: Cengage Learning. (Call number: HF5549.5.I6 .W46 2014)
9. Wrathall, J. (2011). *Event management: Theory and practice*. North Ryde, N.S.W: McGraw-Hill. (Call number: GT3405 .W72 2011)

UQ* 1xx01 Co-curiculum I

Synopsis

Kursus ini ditawarkan dalam pelbagai bentuk aktiviti pilihan untuk pelajar peringkat Sarjana Muda dan Diploma. Sembilan bidang aktiviti yang ditawarkan adalah Pengucapan Awam, Keusahawanan, Sukan, Khidmat Komuniti, Kesukarelawanan, Kepimpinan, Kebudayaan, Daya Usaha dan Inovasi dan Sastera Liberal.

References

1. Jamaludin Badusah et al. (2009). Pembangunan Pelajar: Memperkasakan Kokurikulum Institut Pengajian Tinggi. Jabatan Pengajian Tinggi & Penerbit Universiti Putra Malaysia.

UQ* 1xx01 Co-curiculum II

Synopsis

Kursus ini ditawarkan dalam pelbagai bentuk aktiviti pilihan untuk pelajar peringkat Sarjana Muda dan Diploma. Sembilan bidang aktiviti yang ditawarkan adalah

Pengucapan Awam, Keusahawanan, Sukan, Khidmat Komuniti, Kesukarelawanan, Kepimpinan, Kebudayaan, Daya Usaha dan Inovasi dan Sastera Liberal.

References

1. Jamaludin Badusah et al. (2009). Pembangunan Pelajar: Memperkasakan Kokurikulum Institut Pengajian Tinggi. Jabatan Pengajian Tinggi & Penerbit Universiti Putra Malaysia.

BWM12203 Mathematics for Engineering Technology I

Synopsis

Limits and Continuity: Techniques of finding limits. L'Hopital's rule: indeterminate form of type $0/0$, $\yen/\yen$, $0 \cdot \yen$, 0^0, $\yen^0$, $1^\yen$, $\yen - \yen$. Continuity. **Differentiation and Applications:** Techniques of differentiation: product rule, quotient rule, chain rule. Implicit differentiation. Higher derivatives. Differentiation of implicit functions and parametric equations. **Integration:** Techniques of integration: integration by substitution, integration by parts, integrating rational functions, integrating power of trigonometric functions, integrating rational functions of sine and cosine and integration by trigonometric substitution. Further Differentiation and Integration by mathematical software. **Power Series:** Convergence test. Taylor and Maclaurin series. Differentiation and integration of power series. Applications of power series. **Vector-valued Functions**: Definition and graphs. Differentiations and integrations. Tangent vectors, normal vectors, arc length and curvature. Motion in a plane curve. Directional derivatives and gradients of functions of two variables.

References

1. Abd. Wahid Md. Raji, Hamisan Rahmat, Ismail Kamis, Mohd Nor Mohamad, Ong Chee Tiong. (2008). Calculus for Science and Engineering Students. Malaysia: UTM Publication. (QA303.3 .C34 2008 a)
2. Anton, H., Bivens, I., Davis, S. (2005). "Calculus." 8th Ed. USA: John Wiley & Sons, Inc. (QA303 .A576 2005)
3. Nafisah@Kamariah Md Kamaruddin, Phang, Chang, Phang, Piau & Tay, Kim Gaik (2004). Numerical Method. 1st ed. Malaysia. UTHM. (QA297 .N854 2007 a)
4. Smith, Robert T. Minton, Roland B. (2006). Calculus: Concepts & Connections. Boston. McGraw-Hill. (QA303.2 .S64 2006)
5. Stroud, K. A. (2007). Engineering Mathematics. 5th Ed. London: Macmillan Press Ltd. (TA330 .S77 2007)

BWM 12303 Mathematics for Engineering Technology II

Synopsis

Introduction to Differential Equation: Definitions and terminology, Formation and solution of differential equation, Differential equation as mathematical model. **First Order Differential Equation:** Formation. Initial-value problem. Methods of solution: separating the variables, homogeneous, linear, exact and 4th order Runge- Kutta. Applications: Newton's Law of cooling. **Second Order Linear Differential Equation with Constant Coefficients:** Homogeneous and non-homogeneous equation. Initial and boundary value problems Methods of solution: method of undetermined coefficients, method of variation of parameters

and finite-difference method. Applications in mechanical motions includes free oscillations and force oscillations. **Laplace Transforms:** Definition. Linearity. First shift theorem.

Multiplying by t^n. Unit step functions. Delta functions. Second shift theorem. **Inverse Laplace transform**: Definition and its properties. Convolution theorem. Solve initial and boundary value problems for linear differential equations with constant coefficients which involve unit step functions, Dirac Delta functions and periodic functions. **Numerical Solution of Differential Equations:** Initial-value problem: Euler method, Taylor series method, Fourth Order Runge-Kutta method. Boundary-value problem: finite- difference method.

References

1. Abd. Wahid Md. Raji, Mohd Nor Mohamad. (2009). Differential Equations for Engineering Students. Malaysia: Comtech Marketing Sdn. Bhd.
2. James, Glyn. (2011). Advanced Modern Engineering Mathematics. 4th Ed. England. Prentice Hall. (TA330 .A38 2011)
3. Stroud, K. A., Booth, D. J. (2007). Advanced Engineering Mathematics. 4th Ed. USA: Palgrave Macmillan. (QA39.3 .S77 2003)
4. Stroud, K. A., Booth, D. J. (2007). Engineering Mathematics. 6th Ed. USA: Palgrave Macmillan. (TA330 .S77 2007)
5. Chapra, S. C. and Canale R. P. (2011). Numerical Methods for Engineers. 6th Ed. Boston. McGraw-Hill. (TA345 .C47 2010)

BWM 22502 Statistics For Engineering Technology

Synopsis

This course introduces **Random Variables:** Discrete and continuous random variables, probability distribution functions, cumulative distribution functions Binomial distribution, Poisson distribution, means and variances, Poisson approximation to Binomial distribution, normal distribution, standard normal distribution, normal approximation to Binomial distribution. **Sampling Distribution:** Sampling distribution of single mean, the sampling distribution of the difference between two means, sampling distribution test: t, chi-square and F distribution. **Estimation:** Point estimate, confidence interval for single mean, difference between two means, single variance and ratio of two variances. **Hypothesis Test:** Type 1 and type 2 errors, hypothesis test for single mean, difference between two means, single variance and ratio of two variances. **Simple Linear Regression:** Graphical method, simple linear regression model, least square method, coefficient of determination, correlation coefficient.

References

1. Norziha Che Him et al. (2009). Engineering Statistics (BSM 2922) First Edition. Pusat Pengajian Sains, UTHM
2. Nafisah @ Kamariah et. al. (2004). Engineering Statistics. Second Edition. Pusat Pengajian Sains, KUiTTHO.
3. Quek Suan Goen, Leng Ka Man & Yong Ping Kiang. (2004). Mathematics STPM. Federal Publications, Selangor.
4. John E. Freund. (1999). Mathematical Statistics. Sixth Edition. Prentice-Hall, New Jersey.
5. Robert D. Mason. (1994). Statistics: An Introduction. Sounders. College Publisher, Texas.
6. Zarina Mohd Khalid et. al. (2012). Introductory Statistics for Engineering Student. Desktop Publisher.

BNR 15002 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 to be covered throughout the course are problem solving, techniques in creativity and techniques in innovation.

References

1. Bernacki, E. (2002). *Wow! That's a Great Idea!* Prentice Hall, Singapore. (HD53 .B47)
2. De Bono, E. (2003). *Serious Creativity 1: Lateral Thinking Tools, Techniques and Application.* Allscript Books, Singapore. (BF408 .D366)
3. De Bono, E. (2003). *Serious Creativity 2: Lateral Thinking Tools, Techniques and Application.* Allscript Books, Singapore. (BF408 .D367)
4. Ceserani, J. & Greatwood, P. (1995). *Innovation and Creativity*. Kogan Page, London. (HD58.8 .C47 1995)
5. Clegg, B. & Birch, P. (2002). *Crash Course in Creativity*. Kogan Page. (HD53 .C534 2002)
6. Lumsdaine, E., Lumsdaine, M. & Shelnut, J. W. (1999). *Creative Problem Solving and Engineering Design*. McGraw- Hill, USA. (BF408 .L85 1999)

BNR 22502 Occupational Safety and Health

Synopsis

This course introduces students to knowledge and skills in occupational safety and health in workplace. Scope of study includes Health, Safety and Environment Managements: introduction to OSH, OSHA 1994 (Act 514), FMA 1967, EQA 1974, occupational safety and health management system, safety, health and environment culture; Risk Management and Assessment: introduction to risk management, risk assessment techniques, HIRARC; Physical Injury & Controls: introduction to physical injury, construction work, electrical work, mechanical work, chemical work; Health Hazards: introduction to health hazards & hygiene, chemical hazards, physical hazards, biological hazards, hygiene; Accident Investigation & Reporting: introduction, accident investigation, investigations and causes of incident, incident analysis and data collection method.

References

1. Occupational Safety and Health Act and Regulations. MDC Publishers Printer Sdn. Bhd. 2001. (Call number: KPG1390.M34 2001 rw N2)
2. Factories and Machinery Act & Regulations. MDC Publishers Printer Sdn. Bhd. 2001. (Call number: KPG1390.A31967 .A4 2001 rw N1)
3. Ismail Bahari (2006). Pengurusan Keselamatan dan Kesihatan Pekerjaan. Edisi ke-2. McGraw Hill Education (Malaysia). (Call number: T55.I85 2006)
4. Davies, V. J. and Tomasin K. (2006). Construction Safety Handbook. 2nd ed. London: Thomas Telford. (Call number: TH443.R43 2006)
5. Anton, Thomas J. (2009). Occupational Safety and Health Management. 3rd ed. New York: McGraw-Hill. (Call number: T55.A57 1989)

BNR 26002 Entrepreneurship

Synopsis

This course cover various topics related to basic entrepreneurship including introduction to entrepreneurship, entrepreneur's characteristics and motivation, screening business environment and opportunity formation of business and managing business. Students will also be exposed to real business.

References

1. Johri, N. (2014). Entrepreneurship. New Delhi: Random
2. Hisrich, R.D. (2008). Entrepreneurship. Boston: McGraw Hill
3. Hisrich, R.D. (2014). Advanced introduction to entrepreneurship. Cheltenham: Edward Elgar
4. Rickets, M. (2002). The economics of business enterprise: an introduction to economic organisation and theory of the firm.

BNR 36502 Engineering Economy

Synopsis

Engineering economy consists of Introduction to Engineering Economics, fundamental cost concepts, cost estimation techniques, time value of money, project evaluation with the benefit-cost ratio method risk analysis and project financing and allocations.

References

1. Sullivan W.G, Wicks E.M. and Koelling C.P, (2012). *Engineering Economy*, 15th Edition, Upper Saddle River, New Jersey, Pearson. (Call number: TA 177.4 S94 2009)
2. Blank, L.T., A. Tarquin (2012): *Engineering Economy*, Seventh Edition, International ed., McGraw-Hill,
3. Blank, L.T., A. Tarquin (2008): *Basics of Engineering Economy*, International ed., McGraw-Hill, New York/. (Call number: TA 177.4 B524 2008)
4. Mohamad Sirin, R. (2007): *Teori Asas Ekonomi Kejuruteraan*, Faculty of Technolgy Management KUiTTHO. Malaysia. (Call number: TA177.4 R67 2007)

BNR 17003 Engineering Mechanics

Synopsis

Mechanics, the study of forces and physical bodies, underpins a very large proportion of all forms of engineering. A thorough understanding of mechanics is essential to any successful engineer. This course helps develop an understanding of the principles of statics and dynamics, and the ability to analyze problems in a systematic and logical manner, including the ability to draw free-body diagrams. The course will also develop the ability to analyze the statics of trusses, frames and machine and the dynamics of particles, systems of particles and rigid bodies.

References

1. Engineering Mechanics statics and dynamics by R. C. Hibbeler, McMillan Publication.

2. Mechanics for Engineers - Statics Fourth Edition, by F. P. Beer and E. R. Johnson, McGraw-Hill Publication.

3. Mechanics for Engineers - Dynamics Fourth Edition, by F. P. Beer and E. R. Johnson, McGraw-Hill Publication.
4. Engineering Mechanics statics and dynamics by J. L. Meriam and Craige, John Willey and Son's publication.
5. Engineering Mechanics by S. P. Timoshenko and D. H. Young, McGraw-Hill publication.

BNR 10203 Electrical Principles I

Synopsis

This course introduces the student with the passive and active components used in DC circuits. Study and practise the basic laws and method of analysis for DC circuits. Know the real application of DC circuits at workplace and measure an electric signals and test the electric components.

References

1. Dorf, Richard C., *Introduction to electric circuits*, 9th ed., Hoboken, NJ : Wiley, 2014.
2. Call Number TK454 .D67 2014
3. Bird, J. O., *Electrical and electronic principles and technology*, 5th ed., Routledge, 2014.Call number:TK146 .B57 2014.
4. Alexander, Charles K., *Fundamentals of electric circuits*, 5th ed., McGraw-Hill, 2013.Call number:TK454 .A43 2013.
5. E.Huges, *Electrical and Electronic Technology*11th edition. Essex: Pearson and PH, 2012. Call number:TK146 .H83 2012

BNR 10303 Electrical Principles II

Synopsis

The topics include a review of the sine and cosine wave, alternating voltage and current including complex numbers. These modules still focus on basic concepts, basic laws and methods of analysis for sinusoidal steady-state analysis and ac power analysis. Wye-delta connections for balanced and unbalanced three-phase systems, applications of transformer, resonance circuits and applications of filter circuits also covered.

References

1. Rizzoni, Giorgio, *Principles and Applications of Electrical Engineering*, 6th edition. McGraw Hill Education, 2016. (TK146 .R59 2016)
2. Dorf, Richard C., *Introduction to electric circuits*, 9th ed., Hoboken, NJ : Wiley, 2014. (TK454 .D67 2014)
3. Bird, J. O., *Electrical and electronic principles and technolog*y, 5th ed., Routledge, 2014. (TK146 .B57 2014)
4. Alexander, Charles K., *Fundamentals of electric circuits*, 5th ed., McGraw-Hill, 2013. (TK454 .A43 2013)
5. E.Huges, *Electrical and Electronic Technology* 11th edition. Essex: Pearson and PH, 2012. (TK146 .H83 2012.)

BNR 13402 Electrical Laboratory I

Synopsis

The course introduces the students with the basic concepts of electrical and electronic engineering and to expose the students towards the analysis of electrical

and electronic circuits. Define and differentiate the fundamental of electrical and electronic circuits and laws.

References
1. Paynter, Robert T, *Introduction of Electricity*, Pearson Prentice Hall, 2011.
2. Balakrishnan, A., *Electrical Circuit Theory*, N. V. Publications, 2008
3. Alexander & Sadiku, *Fundamentals of Electric Circuits*, 3rd ed. McGraw Hill, 2007.
4. Floyd, Thomas L, Upper Sadle River, *Electrical Circuits Fundamentals*,NJ Pearson, 2007.
5. Boylestad, *Introductory Circuit Analysis*, 11th ed. Upper Sadle River,NJ Pearson 2007.
6. James W.Nilsson, Susan A.Riedel, *Electric Circuits,* 7th ed. Upper Sadle River, NJ Pearson 2005

BNR 23502 Electrical Laboratory II

Synopsis

This course provides students with the understanding of electronic workshops due to analog and digital electronic devices are widely used in industrial applications. The purpose of this course is to introduce the students with the basic concepts of electronic devices and to expose the students towards the analysis of analog and digital electronic circuits. ORCAD PSPICE software will be used to design and simulate the circuit, and the student will be introduced to the soldering skill, testing and troubleshooting the complete circuit.

References
1. Nixon, Mark. (2015). *Digital Electronics : A Primer : Introductory Logic Circuit Design*, World Scientific, Call Number: TK7868.D5 .N59 2015
2. Frenzel, Louis E. (2014). *Contemporary Electronics : Fundamentals, Devices, Circuits, and Systems*, McGraw Hill, Call Number: TK7816 .F75 2014
3. Bird, J. O. (2014). *Electrical and Electronic Principles and Technology*, Oxon : Routledge, Call Number: TK146 .B57 2014
4. Tiwari, Ankit. (2014). *Analog and Digital Electronic Circuit*, New Delhi: Random, 2014. Call Number: TK7867 .T58 2014
5. Boylestad, Robert L. (2013). *Electronic Devices and Circuit Theory*, Upper Saddle River, N.J. : Pearson Prentice Hall. Call Number: TK7867 .B69 2013
6. Mitzner, Kraig. (2009). *Complete PCB Design using OrCAD Capture and PCB Editor*, Newnes, Call Number: TK7868.P7 .M57 2009

BNR 20603 Electromagnetic Technology

Synopsis

The topics include a review of the pertinent mathematical apparatus vector algebra, coordinate transformations and vector calculus before going into the topics of electrostatic fields produced by point charges, electric fields in material space, electrostatic boundary value problems, phenomenon of steady electric current, static magnetic field of steady electric currents, ferromagnetic materials, time-changing electric and magnetic fields, electromagnetic wave propagation, transmission lines, and an introduction to the use of numerical methods in solving electrostatics and magnetostatics problems.

References

1. Kodali and V. Prasad, Engi*neering Electromagnetic Compatibility: Principles, Measurement, Technologies, and Computer Models*, New York: IEEE Press, 2007.
2. Bansal and Rajeev, *Engineering Electromagnetic: Applications*, Taylor & Francis, 2006.
3. Guru, Bhag Singh, *Electromagnetic Field Theory Fundamentals* (2nd Edition), Cambridge University Press, 2004.
4. Owen, George E, *Introduction to Electromagnetic Theory*, Mineola, NY: Dover Publications, 2003.
5. Matthew N O Sadiku, *Electromagnetics (*2nd Edition), Sanders College Publishing, 2002.
6. Robert L. Boylestad, and Louis Nashelsky, *Introduction to Electricity, Electronics, and Electromagnetics*, Prentice Hall, 2002.

BNR 20803 Computer Programming

Synopsis

This course is intended to provide a study of programming concept through the use of a high level programming language such as C++. Students will learn to design, code, debug, test and document wellstructured programs based on technical and engineering problems. Topic covered; Software Development Method, programming language basics, data types, input and output operations, the use of arrays, string, pointers and structures, file processing handling and advance applications.

References

1. Delores M. Etter, Jeanine A. Ingber, Engineering Problem Solving with C++, Prentice-Hall, 2008. (Call number: QA76.73.C153 .E874 2008)
2. Jeri R. Hanly, Elliot B. Koffman, Problem Solving and Program Design in C, 4th. Edition. Addison-Wesley, 2004. (Call number: QA76.73.C15 .H364 2004)
3. Katupitiya, Jayantha, Bentley, Kim, Interfacing with C++, Springer, 2006. (Call number: QA76.73.C153 .K39 2006)
4. Jeri R. Hanly, Elliot B. Koffman, C Programming for Engineers, 2nd Edition, Addison-Wesley, 2004.

BNR 20903 Electronic Communication System

Synopsis

This course will cover the basic concepts in electronic communication system including the introduction to communication system, signal and noise, modulation schemes for analog and digital systems, signal transmission, antenna and communication systems applications.

References

1. Matthew N.O. Sadiku., Elements of Electromagnetics, New York: Oxford Universiti Press, 2014. Call Number QC760 .S324 2014
2. Louis E. Frenzel. Principles of Electronic Communication Systems. McGraw Hill. 2008. No. panggilan: TK5101 .F744 2008
3. Electronic Communication Systems. Roy Blake. Delmar/Thomson Learning.

2002. No. panggilan: TK5101 .B563 2002 N1

4. William Schweber. Electronic Communication Systems : A Complete
    Course. Prentice Hall. 2002. No. panggilan: TK5101 .S38 2002

BNR 21703 Microprocessor and Microcontroller

Synopsis

This course is intended to provide a study of the concept of microprocessor and microcontroller with an emphasis on programming skills; design, interfacing between microprocessor/ microcontroller and other devices, CPU architecture, organize and memory interfacing, bus concept, interrupt, communication interfacing and A/D conversion.

References

1. Muhammad Ali Mazidi, Rolin D. Mckinlay, and Danny Causey, PIC Microcontroller and Embedded Systems Using Assembly and C for PIC18, Prentice Hall, 2008. No. Panggilan: TJ223.P76 .M394 2008
2. Barry B. Brey, "INTEL Microprocessors 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Prentium ProProcessor, Pentium II, III, 4, 7/E", Prentice Hall, 2005. No. Panggilan: QA76.8.I2674 .B73 2006
3. Han-Way Huang, PIC Microcontroller: An Introduction to Software and Hardware Interfacing, Thomson-Delmar Learning, 2005. No. Panggilan: TJ223.P76 .H36 2005
4. A.V Deshmukh, "Microcontrollers: Theory and Applications", McGrawHill, 2006. No. Panggilan: Tiada
5. Dogan Ibrahim, "PIC Basic: Programming and Projects", Oxford: Newnes, 2001. No. Panggilan: TJ223.P76 .I27 2001

BNR 25403 Digital Electronics

Synopsis

This course provides knowledge and understanding of basic combinational logic circuits and sequential logic systems as well as their applications. Related topics are digital concepts, numbering systems, logic gates, Boolean Algebra & Theorem, logic simplification, combinational logic circuit, digital arithmetic and combinational logic circuit functions (adders, comparators, decoders, encoder, multiplexers, demultiplexers). Developing an understanding of sequential logic systems and its applications. Related topics are monostable and bistable logic devices such as latches and flip-flops; asynchronous and synchronous counters; shift registers and its applications.

References

1. Tocci, Ronald J., Widmer, Neal S., Moss, Gregory L. (2011). *Digital Systems : Principles and Applications*, 11th ed. Upper Saddle River, NJ. : Prentice Hall. (Call number: TK7868.D5 .T62 2011)
2. Nixon, Mark S. (2015). *Digital Electronics: A Primer: Introductory Logic Circuit Design*, London: World Scientific. (Call number: TK7868.D5 .N59 2015)
3. Tiwari, Ankit. (2014). *Analog and digital electronic circuit*, New Delhi: Random. (Call number: TK7867 .T58 2014)
4. Kharate, G. K. (2010). *Digital Electronics*. New Delhi: Oxford University Press. (Call number: TK7868.D5 .K42 2010)
5. Mandal, Soumitra K. (2010). *Digital Electronics: Principles and Applications*. New Delhi: Tata McGraw Hill. (Call number: TK7868.D5 .M36 2010)

BNR 27103 Electronic Principles I

Synopsis

This course introduces students to fundamental theories in diodes, BJT and FET working principle and its application. It will examine some key issues in basic

construction of BJT and MOSFET amplifiers and switch with special focus on analysis through fixed, self and voltage divider-bias equivalent circuits. The course will also provide practice in carrying out a computer simulation of the BJT and FET circuits using Multisim/ PSpice software to practice self-assessment and interpretation of work by comparing analysis and simulation results.

References

1. Bird, J. O., Electrical and Electronic Principles and Technology, 5th ed., Milton Park, Abington, Oxon : Routledge, 2014. Call Number TK146 .B57 2014
2. Frenzel, Louis E., Contemporary Electronics : Fundamentals, Devices, Circuits, and Systems, New York, NY : McGraw Hill ; 2014. Call Number TK7816 .F75 2014
3. Alexander, Charles K., Fundamentals of electric circuits, 5th edition, McGraw- Hill, Call number: TK454 .A43 2013
4. Kal, Santiram, Basic Electronics : Devices, Circuits and IT Fundamentals, New Delhi : Prentice-Hall of India, 2012. Call Number TK7816 .K34 2012

BNR 27203 Electronic Principles II

Synopsis

This course provides a thorough foundation in analogue circuits as applied to systems used in generating, amplifying and in general processing signals which are continuous functions of time. The aims is to provide students with knowledge of the operational principles and practical limitations of analogue circuits at device and circuit level, as well as instructing them in the analysis and design of these circuits. All of the principles and techniques learned are applicable to the design of analogue systems on a wider scale.

References

1. Boylestad, Robert L.; Electronic devices and circuit theory 11th. Edition; Pearson Prentice Hall, 2013; TK7867 .B69 2013
2. Thomas L. Floyd; Electronic Devices, 7th Ed. ; Prentice Hall, 2005; TK7870 .F53 2005
3. Frenzel, Louis E., Contemporary electronics : fundamentals, devices, circuits, and systems; McGraw Hill; 2014; TK7816 .F75 2014
4. Kal, Santiram; Basic electronics: devices, circuits and IT fundamentals; Prentice-Hall of India, 2012; TK7816 .K34 2012
5. Bird, J. O. ; Electrical and electronic principles and technology 5th ed. ; Routledge, 2014; TK146 .B57 2014

BNR 27302 Measurement and Instrumentation

Synopsis

This course introduces students some of the metrological terminologies used in experimental methods, concept of metrology and its application. The course will also provide understanding of the standardization concept as the management system of standards and quality. The measurement technique for electrical quantity and analysis of the result according to ISO Guide will be introduce. Transducer operations, characteristic and functions will be studied, examined and analyzed.

References

1. Foreman, Matthew R, Instrumentation and Measurement : New York : Magnum Publishing, 2016, Call Number: T50 .I58 2016

2. Sheel, Satya, Instrumentation: Theory And Applications, Oxford: Alpha Science International Ltd., 2014, Call Number: TK7878.4 .S53 2014.
3. Garrett, Patrick H., Advanced Instrumentation and Computer I/O Design: Defined Accuracy Decision and Control with Process Applications, Hoboken, NJ: IEEE Press, 2013 Call Number:TK7887.5.G37 2013.
4. Placko, Dominique, Fundamentals of instrumentation and measurement, London : ISTE, 2007, Call Number: T50 .F87 2007
5. Kirk, Franklyn, Instrumentation, Hoboken, Homewood, IL : American Technical Publishers, 2005, Call Number:TA165 .I58 2005
6. Morris, Alan S., Measurement and instrumentation principles, Oxford : Butterworth-Heinemann, c2001, Call Number: TA165 .M67 2001

BNR 27403 Computer Aided Design

Synopsis

This course provides fundamentals on creating, editing and plotting of 2D Autocad drawings, adding text and dimensions to drawings, produce orthographic drawing, Introduction to three dimensional drawing, specifying user-defined coordinate systems, development of 3D drawings and models from engineering sketches and orthographic drawings, creating assembly and explode drawing for project drawing.

References

1. Paul Richard, Frank E. Puerta and Jim Fitzgerald (2009), "AutoCAD 2009 in 2D and 3D: A Modern Perspective", Upper Saddle River, NJ: Pearson. T385 .R525
2. Khairul Anuar Hanafiah (2006), Lukisan Kejuruteraan Berbantu Komputer – Edisi Kedua, Universiti Teknologi Malaysia, Johor, Malaysia. TA174 .K42 2006
3. Jamaluddin Mohd Taib, Khairul Anuar Hanafiah dan Mohd Fadzli Daud (2006), Rekabentuk Berbantu Komputer – Asas Pemodelan, Universiti Teknologi Malaysia, Johor, Malaysia.
4. AutoCAD 2006, user guide.
5. John Wilson and Alan J. Kalameja (2003), Autocad 2002: 3D Modelling, A Visual Approach, Autodesk. T385 .W546 2003

BNR 37502 Control System

Synopsis

This course is to provide a comprehensive understand on control system that is essential in any field of engineering technology and science. Control system is an important and integral part of space-vehicle systems, robotic systems, modern manufacturing systems, and any industrial operation involving control of temperature, pressure, humidity, flow, etc. It is desireable that most engineers and scientists are familiar with theory and practice of control system.

References

1. Houpis, Constantine H. Linear control system analysis and design with MATLAB. Boca Raton [etc.] : CRC Press/Taylor and Francis Group, 2014. Call Number : TJ213 .H68 2014.
2. Nise, Norman S. Control Systems Engineering. Hoboken, NJ : John Wiley & Sons, Inc., 2011. Call Number : TJ213 .N57 2011.

3. Hishamuddin Jamaluddin. Introduction to Control Engineering. UTM Skudai : Penerbit UTM , 2011. Call Number : TJ213 .H58 2011.
4. Ogata, Katsuhiko. Modern Control Engineering. Upper Saddle River, NJ : Pearson/Prentice Hall, 2010. Call Number : TJ213 .O32 2010.

5. Dorf, Richard C. Modern control systems. Upper Saddle River, NJ : Pearson/Prentice Hall, 2008. Call Number : TJ216 .D67 2008.
6. Herlina Abdul Rahim. Pengenalan Sistem Kejuruteraan Kawalan, Skudai : Penerbit Universiti Teknologi Malaysia, 2004. Call Number : TJ213 .H47 2004.

BNR 37602 Technology Design Project

Synopsis

This course introduces students with the principles of integrated electrical and electronic engineering technology design project based on a topic selected from the courses studied or a related engineering technology problem. It involves teamwork, project management, engineering technology design, and technical presentation in a team environment. Each team is expected to address problem statement, in-depth survey, create layout design, build circuit diagram using any electrical or electronic softwares, create prototype, evaluation and revision of design towards engineering and technology problem solution. The students also have to ensure that the designed project meets a specified needs with appropriate consideration for public health and safety, cultural, societal, project management, economy, and environmental.

References
1. Dym, Clive L., Engineering design: a project-based introduction, 4th ed., New York: John Wiley, 2014, call number: TA174. D95 2014
2. G. Proteus, Matlab, Computer Lab, PCB Lab Dieter. Engineering Design, 3rd Edition. Boston: McGraw-Hill, 2013. Call Number: TA174. D53 2013
3. Ibrahim, Dogan, PIC microcontroller projects in C: basic to advanced, 2nd ed., Amsterdam: Newnes, 2014, call number: TJ223.P76. I276 2014
4. N. Cross. Engineering Design Methods, 3rd Edition. Chicester: John Wiley, 2008. Call Number: TA174 .C76 2008
5. M. N. Horenstein. Design Concepts for Engineers, 2nd Edition. Upper Saddle River, NewJersey: Prentice Hall, 2006. Call Number: TA174 .H67 2006

BNR 37703 Management and Professional Ethics

Synopsis

This course provides exposure on professional ethics, philosophy and ethics theorem, values in professional ethics, responsible in giving services, client and third party obligation, obligation of profession, professional behavioral monitoring, current issues on professional ethics and technology management theory.

References
1. Martin, Mike W. Roland Schinzinger (2010) Introduction to engineering ethics. McGraw Hill. Call number: TA157 .M37 2010
2. Morel-Guimaraes, Laure (2005). Management of technology: key success factors for innovation and sustainable development. Call number: HD45 .M364 2005
3. Martin, Mike and Schinzinger, Roland. (2005). Ethics in Engineering, 4th ed. McGraw-Hill. Call number: TA157 .M37 2005
4. Mohd Janib Johari. (2001). Etika Professional. UTM. Call number: KE6533.4 .M63 2001

5. Spider, Raymond. (2001). Ethics, Tools, and the Engineer, CRC Press. Call number: BJ59 .S64 2001
6. Morton E. Winston and Ralph D. Edelbach. (2012). Society, Ethics and Technology. 4th ed. Boston : Wadsworth Cengage Learning. Call number:

T14.5 .S62 2012.

7. Gunn, Alastair S., Vesilind, P. Aarne. (2011). Hold Paramount: The Engineer's Responsibility to Society. 2nd ed. Stamford, CT : Cengage Learning. Call number: TA157 .G86 2011
8. Whitbeck, Caroline. (2011). Ethics in Engineering Practice and Research. Cambridge : Cambridge University Press. Call number: TA157 .W44 2011
9. Martin, Mike W. (2010). Introduction to Engineering Ethics. Boston, MA : McGraw-Hill. Call number: TA157 .M37 2010.
10. Vesilind, P. Aarne. (2010). Engineering Peace and Justice: The Responsibility of Engineers to Society. New York : Springer. Call number: TA157 .V474 2010 11.Machado, Carolina, Davim, J. Paulo. (2013). Management and engineering innovation. Hoboken, NJ : ISTE Ltd/John Wiley and Sons Inc. Call Number: HD45 .M44 2013.

BNF 22202 Multimedia Technology

Synopsis

This course is intended to provide a study of multimedia technology and application theory, practice and issues through the use of a multimedia application development and authoring tools. Topic covered; Introduction to Multimedia, Multimedia Application Development and Authoring, Multimedia Elements, Multimedia I/O Technology, Multimedia Storage and Retrieval Technology .

References

1. Syed Mahbubur Rahman (2008). Multimedia technologies: concepts, methodologies, tools and applications. London: Information Science Reference. No. panggilan: QA76.575 .R33 2008 v.1
2. Ze-Nian Li, Mark S. Drew (2004). Fundamentals of Multimedia. Int. Edition. Pearson Prentice-Hall.
3. Nigel Chapman and Jenny Chapman (2009). Digital Multimedia. Wiley. No. panggilan: QA76.575 .C53 2009
4. Prabhat K. Andleigh (1995) Multimedia Systems Design. Prentice Hall.
5. Jeffcoate ((1994). Multimedia in Practice – Technology and Applications. Prentice Hall, 1994

BNF 36002 Signal and Systems

Synopsis

This course introduces the students the fundamental ideas of signals and system analysis. The signal representations in both time and frequency domains and their effects on systems will be explored. Specifically, the topics covered in the course include basic properties of continuous-time and discrete-time signals, the processing of signals by linear time-invariant (LTI) systems, Fourier series, Fourier and Laplace transforms. Important concepts such as impulse response, frequency response and system transfer functions as well as techniques of filtering and filter design, modulation, and sampling, are discussed and illustrated.

References

1. A. V. Oppenheim, Alan S. Willsky and S. Hamid Nawab. Signals and Systems. 2nd Edition, New Jersey: Prentice-Hall, 2014. Call Number: QA402 .O66 2014

2. Alexander D. Poularikas. Signals and Systems Primer with MATLAB. CRC Press 2007. Call Number: TK5102.9 .P68 2007
3. NagoorKani. Signals and Systems, Tata McGraw Hill Education Private Limited, 2010. Call Number: TK5102.9.K36 2010

4. S. Poornachandra and B. Sasikala. Signals and Systems. 3rd Edition, Tata McGraw Hill Education Private Limited, 2010. Call Number: QA402.P66 2010
5. David McMahon. Signals and Systems demystified. Mc Graw Hill, 2007. Call Number: TK5102.9 .M38 2007

BNF 32203 Computer Network

Synopsis

This course is to provide a comprehensive understand on computer network utility. Student will learn the principle of networking, protocols needed, technology used and how to managing a secured and reliable network. Topic covered are the overview of computer networking, TCP/IP and OSI protocol suite, Network Application, Transport Protocol, Internet Routing, Network and Link Layer, Internet Application and Network Security.

References

1. James F. Kurose and Keith W. Ross, "Computer Networking, A Top-Down Approach", 4th Edition, Addison Wesley, 2008. No Panggilan: TK5105.875.I57 .K87 2008
2. Behrouz A. Forouzan, "Data Communication and Networking", 4th Edition, Mc Graw Hill, 2007. No Panggilan: TK5105 .F67 2012
3. Willilam Stalling, "Cryptography and Network Security", 4th Edition, Prentice Hall, 2006. No Panggilan: TK5105.59 .S73 2011
4. Fred Halsall, "Computer Networking and the Internet", 4th Edition, Addison Wesley, 2005. No Panggilan: TK5105.5 .H35 2005
5. William Stallings, "Computer Networking with Internet Protocols and Technology", 1st Edition. Prentice Hall, 2004. No Panggilan: TK5105.5 .S72 2004

BNF 31802 Computer Architecture

Synopsis

The course introduces students with fundamentals of computer organization and architecture and relates these to contemporary design issues. The application of these concepts depends on the current state of the technology and the price/performance objectives of the designer. This syllabus is organized into eight chapters. The structure and functional of computer are covered in chapter 1 and chapter 2. The performance issues are also discussed in chapter 2. Chapter 3 through chapter 6 covered the major components of the computer systems. Architectural issue such as instruction sets design and data types are covered in chapter 7. While, organizational issues such as pipelining also covered in chapter 8.

References

1. Andrew S. Tanenbaum. "Structured Computer Organization", 5th Edition. Pearson Prentice Hall-New Jersey. 2006. No Panggilan: QA76.6 .T38 2006
2. Murdocca, Miles J; Heuring, Vincent P. "Principles of Computer Architecture", International Edition. Prentice Hall-New Jersey. 2000. No Panggilan: QA76.9

.A73 .M88 2000 N1

3. William Stallings. "Computer Organization & Architecture: Designing for Performance", 7th Edition. Pearson Prentice Hall-New Jersey. 2006. No Panggilan: QA76.9.C643 .S72 2010

4. Hamacher, Carl; Vranesic, Zvonko; Zaky, Safwat. "Computer Organization", 5th Edition. McGraw-Hill-Singapore. 2002. No Panggilan: QA76.9.C643 .H35 2002

5. Williams, Rob. "Computer Systems Architecture: A Networking Approach", Pearson Education-England. 2001. No Panggilan: QA76.9.A73 .W55 2006

BNF 36103 Digital Communications

Synopsis

This course is to provide a broad introduction to the principles of digital communications including: Introduction to information theory, entropy, the source coding theorem, quantization, waveform coding. Vector representation of signals, the Gaussian channel (AWGN), optimal receivers, error probability, matched filters, ML and MAP. Signal spectrum. Binary and non-binary modulation. Bit and symbol rate. ASK, FSK, PSK, QAM. Coherent and non-coherent modulation, CPM, MSK. Symbol and bit-error probabilities. Spectrum and bandwidth. Abstract channel models, mutual information, channel capacity, the channel coding theorem. Linear block codes, cyclic codes, convolutional codes. Coding gain, hard and soft decisions. The Viterbi algorithm.

References

1. Bernard Sklar, "Digital Communication Fundamentals and Applications", 2th Edition, Prentice Hall, 2001. No Panggilan : TK5103.7 .S55 2001
2. Otung, Ifiok, Digital communications: principles and systems, London : The Institution of Engineering and Technology, 2014. No Panggilan : TK5103.7 .O78 2014.
3. Rao, P. Ramakrishna, Digital communication, New Delhi : Tata McGraw-Hill, 2011. No Panggilan : TK5103.7 .R36 2011
4. Johannesson, Rolf, Fundamentals of convolutional coding, New York : IEEE, 2015. No Panggilan : TK5102.92 .J63 2015

BNF 32402 Computer Network Laboratory

Synopsis

This course is to provide a comprehensive understand on computer networking. The students will learn about cabling, network protocols (including a close-up look at TCP/IP), network devices like hubs, switches, routers, firewalls, repeaters, gateways, and more. The students will learn how to set up peer-to-peer networking and server-based networking and choosing the right networking model for different situation. The students will be trained to see the critical success factors in setting up a wireless network, including the often-overlooked security features and learn how to create a secure network and avoid common network security mistakes.

References

1. James F. Kurose and Keith W. Ross, "Computer Networking, A Top-Down Approach", 4th Edition, Addison Wesley, 2008. No Panggilan: TK5105.875.I57 .K87 2008
2. Behrouz A. Forouzan, "Data Communication and Networking", 4th Edition, Mc Graw Hill, 2007. No Panggilan: TK5105 .F67 2012
3. Willilam Stalling, "Cryptography and Network Security", 4th Edition, Prentice Hall, 2006. No Panggilan: TK5105.59 .S73 2011
4. Fred Halsall, "Computer Networking and the Internet", 4th Edition, Addison Wesley, 2005. No Panggilan: TK5105.5 .H35 2005
5. William Stallings, "Computer Networking with Internet Protocols and

Technology", 1st Edition. Prentice Hall, 2004. No Panggilan: TK5105.5 .S72
2004

BNF 32303 Operating System

Synopsis

This course is intended to provide a clear description of the concepts in operating system. Topic covered; Introduction to operating system, process and scheduling, Memory management, Hardware management, Fail management, Security and Case study.

References

1. Silberschatz, A., "Operating System Concepts", 7th Edition, John Wiley & Sons, 2005. No Panggilan: QA76.76.O63 .S54 2005
2. Modern Operating Systems, 3nd Ed.; Andrew S. Tanenbaum; Prentice Hall; 2005. No Panggilan: QA76.76.O63 .T36 2001
3. W. Stalling, "Operating Systems Internals & Design Principles", 5th Edition, Pearson Education International, 2005. No Panggilan: QA76.76.O63 .S74 2012
4. Davis & Rajkumar, "Operating Systems", 6th Edition, Pearson Education International, 2005. No Panggilan: QA76.76.O63 .D29 2005
5. Deitel, Deitel & Choffnes, "Operating Systems", 3rd Edition, Pearson Education International, 2004. No Panggilan: QA76.76.O63 .D44 2004

BNF 32102 Communication System Laboratory

Synopsis

This course introduces students with the basic concepts in electronic communication system including the introduction to communication system, signal and noise, modulation schemes for analog and digital systems, signal transmission, antenna and communication systems applications.

References

1. John G. Proakis, Masoud Salehi. Communication System Engineering. 2002. No. panggilan: TK5101 .P75 2002
2. Benvenuto, Nevio, Communication Systems: Fundamental and Design Methods. Wiley. 2001. No. panggilan: QA76.76.I58 .C65 2001
3. Tranter, William H. Principle of communication systems simulation with wireless application. Prentice Hall. 2004. No. panggilan: TK5102.5 .P75 2004

BNF 43103 Fiber Optic Technology

Synopsis

This course covers the fundamental of fiber optic technology. The light propagation: space, wave packet; Optical cable and optical fibre: types, characteristics, usage, losses, optical modulation, coupling light into fibre, fibre communication link; Optical source: LED, Laser; Photodetector: Photodiode PIN, APD; Optical components: oscillator, isolator, connector, switch, coupler; Multichannel optical system: digital transmission, WDM, system design, noise and attenuation, SNR, BER, OTDR, OSA.

References

1. Fiber-Optic Communication Systems, 3rd Ed, Govind P. Agrawal , John

Wiley & Sons, 2002. No. panggilan: TK5103.59 .A37 2002

2. Fiber-Optic Communications Technology, Djafar K. Mynbaev dan Lowell L. Scheiner, Prentice Hall, 2001. No. panggilan: TK5103.59 .M96 2001 N2

3. Optical Fiber Communications, 3rd Ed, Gerd Keiser, McGraw-Hill, 2000. No.

panggilan: TK5103.59 .K44 2011
4. Fiber Optic Communications: Systems, Analysis, and Enhancements, Gerard Lachs, McGraw-Hill, 1998. No. panggilan: TK5103.59 .L33 1998
5. Understanding Optical Communications, Harry J. R. Dutton, 1998

BNF 43002 Cellular Communication Technology

Synopsis

The course covers a broad range of fundamental topics relating to wireless communication technology which includes Propagation-Loss models, Mobile Fading Channels, Multiple Access techniques, the GSM, 3G and 4G standards and Satellite Communication Systems. Central to the course is a detailed explanation of the fundamental principles of the existing digital mobile communication Mobile and Satellite Communications Systems. The emphasis of this course is less on the theoretical underpinnings of wireless communications, and more on how the conceptual building-blocks of wireless communication systems are implemented in real-world cellular and satellite communication systems.

References

1. Hsiao-Hwa Chen, Next Generation Wireless Systems and Networks, 1st Ed, Willey, 2006. No. Panggilan: TK5103.2 .C45 2006
2. Dharma Prakash Agrawal, Introduction to Wireless and Mobile Systems, 2nd Edition, Thomson, 2006. No. Panggilan: TK5103.2 .A37 2011
3. T.S. Rappaport, Wireless Communication: Principles and Practice, 2nd Ed, Prentice Hall, 2002. No. Panggilan: TK5103.2 .R37 2002
4. H Hamuda, Cellular Mobile Radio System, John Wiley, 1997. No. Panggilan: TK6570 .H35 1997
5. GSM Cellular Radio, J Tisal, John Wiley, 1997. No. Panggilan: TK5103.4 .T57 1997.

BNF 46103 Embedded Systems and Applications

Synopsis

This course introduces the design of embedded systems and its related technology by developing the underlying knowledge and skills appropriate to today's embedded systems in both hardware and software development. On the hardware side, it includes in-depth study both of microcontroller design and of the circuits and transducers to which the microcontroller must interface. On the software side, programming in both Assembly and C is covered. This culminates in the study of a Real Time Operating System (RTOS), representing the most elegant way that an embedded system can be programmed.

References

1. Designing Embedded Systems with PIC Microcontrollers: Principles and Applications, Tim Wilmshurst. Newnes, Oxford, 2007. No. Panggilan: TK7895.E42 .W544 2007
2. Embedded System Design: A Unified Hardware/Software Introduction, F. Vahid and T. Givargis. John Wiley & Son Inc. 2002. No. Panggilan: TK7895.E42 .V33 2002
3. Embedded Systems: Architecture, Programming and Design, Raj Kamal. McGraw Hill, 2003. No. Panggilan: TK7895 .K35 2003

BNF 44003 Microwave, Antenna and Propagation Technology

Synopsis

The course covers a broad range of fundamental topics relating to microwave engineering technology, antennas & propagation which includes transmission line theory, microwave active and passive devices, antennas parameters, various type of antennas, propagation impairment as well as their effect modelling and prediction.

References

1. Khan, Ahmad Shahid.Microwave engineering : concepts and fundamentals. Boca Raton, FL : CRC Press, 2014. Call Number :TK7876 .K42 2014.
2. Stutzman, Warren L.,Antenna theory and design. Hoboken: John Wiley 2013. Call Number : TK7874.6 .S78 2013
3. Saakian, Artem,Radio wave propagation fundamentals.Norwood, MA :Artech House, 2011. Call Number :TK6550 .S22 2011
4. Pozar, David M., Microwave engineering, New York : John Wiley, 2005, Call No.: TK7876 .P69 2005.

Balanis, Constantine A.., Modern antenna handbook, Hoboken, NJ : John Wiley, 2008, Call No.: TK7871.6 .M62 2008.

BNR 32803 Bachelor Degree Project I

Synopsis

Bachelor Degree Project is a systematic practical academic project utilising knowledge, skills, engineering technology concepts and problem solving techniques. This project could be:

1. Collaboration with related industries such as:
   a) Industrial Product / Process / System Development (Hardware / Software).
   b) Industrial Problems and Cases.
   c) Industrial Issues / Phenomenon.
2. Integrated multidiscipline projects such as:
   a) Combination of different discipline to achieve the required objectives.
   b) Combination of different technology in product / process / system development.
3. Problem-base projects such as:
   a) Previous case studies that require further investigations for continuous improvement.
   b) Problems and cases at works that experienced by the lecturers and engineers in the indutries.
   c) Problems and cases at works that experienced by the students during their internship program in the industries.

References

1. Buku Panduan Penulisan Thesis, UTHM.
2. Panduan Pelaksanaan Projek Sarjana Muda, UTHM.
3. Books, journals and other information which relates with the research project.

BNR 43505 Bachelor Degree Project II

Synopsis

Bachelor Degree Project II course is the continuation of Bachelor Degree Project I

course. It is an important mechanism in teaching and learning process because it integrates all courses acquired in engineering technology. This course will also develop the student's capability to analyze, discuss and present the results of the

project research clearly, effectively and confidently in both oral presentation and in Bachelor Degree Project report.

References

1. Buku Panduan Penulisan Thesis, UTHM.
2. Panduan Pelaksanaan Projek Sarjana Muda, UTHM.
Books, journals and other information which relates with the research project.

Electives

BNF 43203 Computer Data Security

Synopsis

This course is intended to provide students with fundamental issues and first principles of security and information assurance. The course will look at the security policies, models and mechanisms related to confidentiality, integrity, authentication, identification, and availability issues related to information and information systems. Other topics covered include basics of cryptography (e.g., digital signatures) and network security (e.g., intrusion detection and prevention), risk management, security assurance and secure design principles, as well as e-commerce security. Issues such as organizational security policy, legal and ethical issues in security, standards and methodologies for security evaluation and certification will also be covered.

References

1. Negnevitsky, M. "Artificial Intelligence A Guide to Intelligent Systems", 2nd Edition. Pearson Education Limited ,2005. No. Panggilan: QA76.76.E95 .N43 2011
2. Stuart Rusell, Peter Norvig, "Artificial Intelligence: A Modern Approach", 2nd Edition, Prentice Hall, 2003. No. Panggilan: Q335 .R97 2003
3. Gorge F. Luger, "Artificial Intelligence: Structures and Strategies for Complex Problem Solving", 5th Edition, Addison Wesley, 2005. No. Panggilan: Q335 .L84 2009
4. Christopher M. Bishop. "Pattern Recognition and Machine Learning", New York: Spinger, 2006. No. Panggilan: Q327 .B57 2006

BNF 43603 Artificial Intelligence

Synopsis

This course is intended to provide students with a survey of different aspects of artificial intelligence (AI). A variety of approaches with general applicability will be developed. We will begin our study of AI with a look at knowledge representation formalisms and search techniques, the ultimate tools of most AI programs. Content areas include logic and theorem proving, game playing programs, planning, inheritance networks, genetic algorithms, and expert systems. Student will explore the design of AI systems which use learning to improve their performance on a given task. In addition to these topics, specific domains such as computer vision, natural language processing and robotic will be addressed.

References

1. Gordon, Brent M., "Artificial Intelligence: approaches, tools, and applications" New York: Nova Science Publishers, 2011. Call No. Q335.5 .A78 2011

2. Negnevitsky, M. "Artificial Intelligence A Guide to Intelligent Systems", 3nd Edition. Pearson Education Limited, 2011. Call No QA76.76.E95 .N43 2011
3. Stuart Rusell, Peter Norvig, "Artificial Intelligence: A Modern Approach", 2nd Edition, Prentice Hall, 2003. Call No Q335 .R97 2003
4. Gorge F. Luger, "Artificial Intelligence: Structures and Strategies for Complex Problem Solving", 6th Edition, Addison Wesley, 2009. Call No Q335 .L84 2009

BNF 44203 Digital Design Technology

Synopsis

This course introduces the student to the concept of digital system design that consist of design process, digital circuit optimization, VLSI design, Hardware Description Language (HDL), state machine design, introduction to integrated circuit fabrication, digital system design and testing of logic circuits. Beside that, students will use CAE software as a design tool for better understanding the course.

References

1. Salsic and Zoran "Digital Systems Design and Prototyping", 2nd Edition, Kluwer 2000.
2. Stephen Brown. "Fundamentals of Digital Logic with VHDL Design", McGraw Hill International Editions, 2000.
3. John P. Uyemura, "A First Course in Digital System Design: An Integrated Approach", California:Brooks/Cole, 2000.
4. Wayne W. "Modern VLSI Design: System-On-Chip Design", Prentice Hall, 2002.
5. Chen W.K. "The VLSI Handbook", CRC Press & IEEE Press, 2000.

BNF 44403 Internet of Things and Applications (IOT)

Synopsis

This course introduces on Internet of Things and its role in IR4.0. Next, design an embedded IoT gateway and IoT devices. Configure IoT end-to-end systems from IoT devices to the cloud. Create the operations of various I/O devices. Set up wireless local area network (WLAN) 802.11, Bluetooth LE and ZigBee wireless connectivity. Apply industry standard software tools in IoT development. Evaluate I/O signals and troubleshoot IoT systems using industry-grade test and measurement instruments.

References

1. Adrian McEwen., "Designing the Internet of Things"John Wiley & Sons, 2014, Available Online
2. Mukhopadhyay, Subhas Chandra "Internet of things : challenges and opportunities" Springer, 2014 TK7895.E43 .I57 2014.
3. Norris, Donald "The Internet of things : do-it-yourself projects with Arduino, Raspberry Pi, and Beaglebone Black" Mcgraw-Hill, 2015 QA76.8.R19 .N674 2015
4. Hersent, Olivier The internet of things : key applications and protocols Wiley, 2012 TH6012 .H47 2012
5. Hwang, Kai Distributed and cloud computing : from parallel processing to the Internet of things Morgan Kaufmann, 2012 QA76.585 .H82 2012.

BNF 44503 Advanced Communication Technology

Synopsis

This course is to provide a comprehensive understand on the advanced communication technology and its latest applications.

References

1. Hsiao-Hwa Chen, Mohsen Guizani, "Next Generation Wireless System and Network", John Wiley & Sons, Ltd, 2006. No Panggilan : TK5105.875.I57 .K87 2016
2. Leick, Alfred, "GPS satellite surveying," Edition: 4th ed., Hoboken : John Wiley, 2015. No Panggilan : TA595.5 .L44 2015.
3. Melvin, William L., "Principles of modern radar," Edison, NJ : SciTech Publishing, 2014. No Panggilan : TK6575 .P74 2014 v.3.
4. Bühlmann, Peter, "Handbook of big data," Boca Raton, FL : CRC Press, an imprint of the Taylor & Francis Group, 2016. No Panggilan : QA76.9.B45 .H36 2016.
5. Stutzman, Warren L., "Antenna theory and design," Edition: 3rd ed., Hoboken, NJ : Wiley, 2013. No Panggilan : TK7874.6 .S78 2013.
6. Haupt, Randy L., "Timed arrays : wideband and time varying antenna arrays," Hoboken : John Wiley, 2015. No Panggilan : TK7871.67.A77 .H384 2015.

BNE 44303 Energy Efficient and Management

Synopsis

This course covers a broad range of knowledge on current and potential future energy management systems, covering Malaysia energy policies and regulation, energy efficient management, energy conversion, and end-use technologies in energy management, with emphasis on meeting regional and global energy needs in the 21st century in a sustainable manner. Students will explore the energy end-use practices and consumption practices in Malaysia. In addition, students will learn a quantitative framework to aid in evaluation and analysis of energy audit and energy management system proposals.

References

1. Hsiao-Hwa Chen, Mohsen Guizani, "Next Generation Wireless System and Network", John Wiley & Sons, Ltd, 2006. No Panggilan : TK5105.875.I57 .K87 2016
2. Leick, Alfred, "GPS satellite surveying," Edition: 4th ed., Hoboken : John Wiley, 2015. No Panggilan : TA595.5 .L44 2015.
3. Melvin, William L., "Principles of modern radar," Edison, NJ : SciTech Publishing, 2014. No Panggilan : TK6575 .P74 2014 v.3.
4. Bühlmann, Peter, "Handbook of big data," Boca Raton, FL : CRC Press, an imprint of the Taylor & Francis Group, 2016. No Panggilan : QA76.9.B45 .H36 2016.
5. Stutzman, Warren L., "Antenna theory and design," Edition: 3rd ed., Hoboken, NJ : Wiley, 2013. No Panggilan : TK7874.6 .S78 2013.
6. Grimm, Christoph (2013). Embedded systems for smart appliances and energy management. New York : Springer
7. Golusin, Mirjana (2013). Sustainable energy management. Amsterdam : Elsevier.
8. Moss, Keith J. (2006). Energy management in buildings. London : Taylor and

Francis.

9. Klinghoffer, Naomi B. (2013). Waste to energy conversion technology. Philadelphia, PA : Woodhead Pub.

10. Malkina-Pykh, I. G. (2002). Sustainable energy : resources, technology and planning. Southampton, UK : WIT Press.
11. Kuglin, Fred, A. and Rosenabum, Barbara A. (2000). The supply chain network @ Internet speed : preparing your company for the E-commerce revolution. New York: AMACOM.

BND 46403 Industrial Revolution 4.0 (IR4.0

Synopsis

This course introduces on Fourth Industrial Revolution and the revolution is very much driven by the smarts in automating decision making and processes. Advancements in IT has resulted in immense improvements in computational power across nearly all electronic devices and enhanced capabilities in connecting the dots in an increasingly networked society. Digital platforms in the Cloud provides a perfect canvas for inventing new business models and for intelligent algorithms to analyse data and derive knowledge for operationalize use by cyber physical systems. This course provides a comprehensive coverage on, among others, the role of data, manufacturing systems, various Industry 4.0 technologies, applications and case studies. In particular, we also draw input from researchers and practitioners on what are the opportunities and challenges brought about by Industry 4.0, and how organisations and knowledge workers can be better prepared to reap the benefits of this latest revolution.

References

1. Jones, Eric L., Locating the industrial revolution : inducement and response, Hackensack, NJ : World Scientific, 2010. ISBN: 9789814295253. [HC253 .J66 2010].
2. Clark, Woodrow W., Sustainable communities design handbook : green engineering, architecture, and technology, Burlington, MA : Butterworth-Heinemann, 2010. [GE170 .C52 2010]
3. Chesney, K, The Victorian Underworld, Harmondsworth: Penguin, 1972.
4. Cole, G and Postgate, P, The Common People, London: Methuen & Co, 1966.
5. Deary, T, The Vile Victorians (Horrible Histories), London: Scholastic Children's Books, 1994.
6. Himmelfarb, G, The Idea of Poverty: England in the Early Industrial Age, London: Faber, 1984, pp 376–77.
7. Horn, P, The Victorian Town Child, Stroud: Sutton, 1997.
8. Hughes, A, The Diary of a Farmer's Wife, 1796–1797, Good Life Press, 2009.
9. Jamieson, A, The Industrial Revolution, London: Edward Arnold, 1982.
10. Kelly, N, Rees, R and Shuter, J, Britain 1750–1900 (Living through History), Oxford: Heinemann, 1998.
11. Mayhew, H, London Labour and the London Poor, London: Penguin, 1985 (originally published 1851).
12. Mingay, G, Rural Life in Victorian England, London: Heinemann, 1977.
13. Moss, P, History Alive 3 1789–1914, Oadby Leicester: Blond Educational, 1968.
14. Royston Pike, E, Human Documents of the Industrial Revolution in Britain, London: Routledge, 2006.
15. Smith, N, The Industrial Revolution (Events and Outcomes Series), London: Evans Brothers, 2002.
16. Williams, B, Victorian Britain (The Pitkin History of Britain), Andover: Jarrod, 2005.

Industrial Training

BNR 46112 Industrial Training

Synopsis

Students are required to do the industrial training for the period of one regular semester (24 weeks) in engineering technological field according to the student's discipline in the approved organizations by the university. Every student will be evaluated by the faculty and industrial supervisor. In this programmed, students are expected to be trained in systematic and structured ways. Students are also trained in the aspects of work safety and health as well as ethics in the industry. Students shall be given the opportunity to be directly involved in the aspects of operation of plants which depend on their availability in the industry. Students are expected to be involved in the workplace with certain constrains that benefited them in improving their mental and physical fitness.

References

1. Penerbit UTHM. 2008. Garis panduan latihan industri. Unit hubungan korporat dan industry (UHKI).