Curriculum

Curriculum for Bachelor of Civil Engineering Technology (Building Services) With Honours.

Table 1. Curriculum Summary for Bachelor of Civil engineering Technology (Building Services) With Honours.

Year	Semester	Course Code	Courses	Credit	Total
1	I	UHB 10100	English For Higher Education	2	21
		UQI 11202	Philosophy and Current Issues	2	
		UQU 10103	Nationhood and Current Development of Malaysia**	3	
		UQ* 1**01	Co-curriculum I	1	
		BWM 12203	Mathematics For Engineering Technology I	3	
		BWM 12603	Physics for Engineering Technology	3	
		BNP 10403	Engineering Drawing & CAD	3	
		BNP 10202	Construction Materials	2	
		BNP 10102	Statics	2	
	II	UQI 10102/ UQI 10202	Islamic Studies/ Moral Studies*	2	18
		UWB 10*02	Foreign Language	2	
		BWM 12303	Mathematics For Engineering Technology II	3	
		BNP 21002	Creativity and Innovation	2	
		BNP 10303	Fluid Mechanics	3	
		BNB 31503	Building Science and Sustainability	3	
		BNP 21103	Construction Engineering Technology & Management	3	
2	I	UHB20102	Essential Academic English	2	19
		UQ* 1**01	Co-curriculum II	1	
		BWM 22502	Statistics For Engineering Technology	2	
		BNP 20103	Hydraulics and Hydrology	3	
		BNP 20203	Mechanics of Materials	3	
		BNP 20402	Occupational Safety & Health	2	
		BNP 21403	Introduction to Environmental Engineering Technology	3	
		BNB 31103	Building Services Technology and Design	3	
	II	UQU 10702	Appreciation, Ethics and Civilization	2	19
		BNP 21502	Entrepreneurship	2	
		BNP 20803	Structure Analysis and Design	3	
		BNP 20903	Soil Mechanic and Foundation	3	
		BNP 21203	Construction Contract and Procurement	3	
		BNP 21303	Geomatic Engineering Technology	3	
		BNB 31703	Water, Drainage and Plumbing System	3	
3	I	UHB 30102	English for Technical Purposes	2	19
		BNP 20303	Highway Technology and Traffic Management	3	
		BNP 30202	Software Application for Engineering Technology	2	
		BNB 31203	Heating, Ventilation Air Conditioning (HVAC)	3	
		BNB 31303	Operation and Maintenance Management	3	
		BNB 31403	Electricity & Energy Supply	3	
		BNB ****3	Elective I	3	
	II	BNP 30402	Engineering Economy	2	18
		BNP 30103	Bachelor Degree Project I	3	
		BNP 30302	Engineering Technologists and Society	2	
		BNB 31603	Fire Protection & Security System	3	
		BNB 31803	Building Transportation System	3	
		BNB 31902	Computer Aided Building Services	2	
		BNB ****3	Elective II	3	
4	I	UHB 40102	English for Occupational Purposes	2	16
		BNP 40105	Bachelor Degree Project II	5	
		BNB 41303	Building Services Integrated Project	3	
		BNB 41403	Facility Management Technology	3	
		BNB ****3	Elective III	3	
	II	BNP 40212	Industrial Training	12	12
				Total Credit	142

Elective
** for each elective, choose one course only.

Elective	Code	Course
I	BNB 40503	Acoustic and Lighting
	BNB 41103	Advanced Building Services Technology
II	BNB 41503	Inteligent Building
	BNB 41203	Building Services Audit and Inspection
III	BNB 40803	Renewble Energy Applications
	BNT 20903	Railway Infrastructure & Facilities
	B** ****3	Open Electives
	B** 4*103	Introduction to Big Data
	B** 4*203	Data Science and Applications
	B** 4*303	Data Visualisation
	B** 4*403	Data Optimisation and Machine Learning
	UQU 40103	Professional @ Work

Year 1 Sem 1

UHB 10101 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

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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

UQI 11202 Philosophy and Current Issues

Sinopsis

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 Iain.

Rujukan

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.
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7. Rosnani Hashim. (2017). Revitalization of Philosophy and Philosophical Inquiry in Muslim Education. Kull of Education, IIUM.
8. Solomon, R.C. & Higgins, K.M. (2010). The Big Questions: A Short Introduction to Philosophy, (8th Ed.). Wadsworth: Cengage Learning.

9. Weiming, T. & Ikeda, D. (2011). New Horizons In Eastern Humanism: Buddhism, Confucianism and The Quest for Global Peace. London: I.B.Tauri

UWS10103 Malaysian Nationhood & Current Development

Sinopsis

Kursus ini membincangkan konsep asas, proses pembentukan dan pembangunan Malaysia. Ia merangkumi Empayar Kesultanan Melayu Melaka, imperialisme dan kolonialisme, patriotisme 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.

Rujukan

1. Mohd. Ashraf Ibrahim (2004).*Gagasan Bangsa Malayan yang Bersatu 1945-57*. Bangi: Penerbit UKM. No. Panggilan: DS597 .M37 2004
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3. Noor Aziah Mohd. Awal (2003). *Pengenalan kepada Sistem Perundangan di Malaysia*. Petaling Jaya: International Law Book Services. No. Panggilan: KPG68 .N66 2003
4. Ruslan Zainudin, Mohd Mahadee Ismail dan Zaini Othman (2005). *Kenegaraan Malaysia*. Shah Alam: Fajar Bakti. No. Panggilan: JQ715 .R87 2005.
5. 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. (Modul Kenegaraan dan Pembangunan Mutakhir Malaysia)

UQ*1xxx1 Co-Curriculum I

Sinopsis

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

BWM12203 Mathematics for Engineering Technology I

Synopsis

Limits and Continuity: Techniques of finding limits. L'Hopital's rule: indeterminate form of type 0/0, ¥/¥, 0 • ¥, 00, ¥0, 1¥, ¥ – ¥. 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. No. panggilan: QA303.3 .C34 2008 a
2. Anton, H., Bivens, I., Davis, S. (2005). "Calculus." 8th Ed. USA: John Wiley & Sons, Inc. No. panggilan: QA303 .A576 2005
3. Nafisah@Kamariah Md Kamaruddin, Phang, Chang, Phang, Piau & Tay, Kim Gaik (2004). Numerical Method. 1st ed. Malaysia. UTHM. No. panggilan: QA297 .N854 2007 a
4. Smith, Robert T. Minton, Roland B. (2006). Calculus: Concepts & Connections. Boston. McGraw-Hill. No. panggilan: QA303.2 .S64 2006

5. Stroud, K. A. (2007). Engineering Mathematics. 5th Ed. London: Macmillan Press Ltd. No. panggilan: TA330 .S77 2007.

BWM12603 Physic for Engineering Technology

Synopsis

The study of physics for engineering technology is intended to introduce and enable students to build an interpretive and predictive model for understanding of basic physics phenomena such as force and energy. The application of scientific methodology in the study of forces promotes scientific ways of investigation to create environmental awareness and competent use of technology. The result will be a student capable of critical analysis and logical reasoning.

References

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4. Urone, P. P. (2001). College Physics. 2nd Ed. USA: Pacific Grove, CA: Brooks/Cole.Call number: QC23 .U76 2001
5. Serway, Raymond A., (2004). Physics for Scientist and Engineers with Modern Physics, 6th Ed., Prentice Hall, Call number: QC23 .S47 2004

BNP10403 Engineering Drawing and CAD

Synopsis

Engineering drawing is the language of the engineers and technicians. Therefore, it is the intent of this course to equip students with the fundamentals of this unique language and to give them the skills necessary to prepare complete, concise, and accurate communications through engineering drawings using AutoCAD.

References:

1. James, L. (2016) AutoCAD 2017 Instructor. United States: SDC Publications.
2. Cadartifex (2016) AutoCAD 2017: A Power Guide for Beginners and Intermediate Users. CreateSpace Independent Publishing Platform.
3. Richard, P. & Fitzgerald, J.(2016) Introduction to AutoCAD 2017: A Modern Perspective. Peachpit Press
4. Dix, M. (2013). Discovering AutoCAD 2013. Boston: Pearson. Call. No.: T385 .D59 2013
5. Grabowski, R. (2009). AutoCAD 2009. Clifton Park, N.Y : Delmar Cengage Learning, 2009. Call No.: T385 .G76 2009

BNP10202 Construction Materials

Synopsis

This course will enable students to demonstrate understanding in the fundamental properties of construction material. Students will learn the basic properties of cement, aggregate, water, admixtures, manufacturing of concrete, masonry, timbers, metals, and other construction materials. At the end of the course students should be able to identify the suitability of each material in a construction, analyse and provide basic solution to the problematic material, and recognize the importance of sustainability practice in construction material.

References

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3. J. Khatib; Sustainability of Construction Materials; Woodhead Publishing Limited, 2009. No. panggilan: TA403 .S97 2009
4. E. V. Amsterdam; Construction Materials for Civil Engineering 4th. Edition; Juta & Co Ltd.; 2008. No. panggilan: TA418.9 .J36 v.6 n.1-4 2002
5. C. L. Page and M. M. Page; Durability of Concrete and Cement Composites; Woodhead Publishing Limited, 2007. No. panggilan: TA440 .D87 2007

BNP10102 Static

Synopsis

The fundamental concept of static is important for engineering technology as foundation of structure design. Principles of statics consists of the study of structures that are at rest under static equilibrium conditions to ensure equilibrium, the forces acting on a structure must balance and net torque acting on the structure should be zero. The static analysis methods provide the means to analyze and determine both internal and external forces acting on a structure.

References:

1. Pytel, A. 2017. Engineering Mechanics: Statics. Cengage Learning, Boston. Call No: TA351.P97 2017
2. Keith M. Walker. 2004. Applied Mechanis for Engineering Technology. 7th Edition. Prentice Hall. USA. Call No: TA350 .W34 2008
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4. J.L. Meriam, L. G. Kraige, William J. Palm. 2003. Engineering Mechanics: Statics. John Wiley and Sons (WIE). 5th Rev Ed edition. Call No: TA350 .M47 2007
5. Ferdinand P.Beer, E. Russel Jonhston Jr and Elliot R.Eisenberg. 2004. Vector Mechanics for Engineers: Statics. 7th Edition. McGrawHill. Singapore. Call No: TA350 .V42 2013

Year 1 Sem 11

UQI 10102 Islamic Studies

Sinopsis

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.

Rujukan

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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

Sinopsis

Kursus ini membincangkan 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 yang berlaku masakini.

Rujukan

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5. 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 a)

UWB 10602 Bahasa Perancis

Sinopsis

Kursus ini disediakan untuk pelajar mempelajari asas Bahasa Perancis. Pelajar didedahkan kepada kemahiran mendengar, membaca, bertutur dan menulis asas perbendaharaan kata, tatabahasa, bentuk ayat dan tulisan. Pelajar juga didedahkan dengan situasi harian sebenar untuk membantu mereka berkomunikasi menggunakan bahasa Perancis.

Rujukan

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.
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5. Kaneman-Pougatch, Massia et al, 1997. *Méthod de français: Café Crème 1*. Paris: Hachette F.L.E.
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9. Hatier. 2002. *Le Nouveau Bescherelle 12,000 French Verbs. English Edition*. Paris: Librairie Hatier.
10. French Dictionary 1999. *The New Collins Robert* 5th ed. Paris: Harper Collins Publishers.

UWB 10902 Bahasa Mandarin

Sinopsis

Kursus ini disediakan untuk pelajar mempelajari asas Bahasa Mandarin. Pelajar didedahkan kepada kemahiran mendengar, membaca, bercakap dan menulis, asas perbendaharaan kata, tatabahasa, bentuk ayat dan tulisan. Pelajar didedahkan dengan situasi harian sebenar yang membolehkan mereka berkomunikasi menggunakan Bahasa Mandarin mudah.

Rujukan

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)
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UWB 11002 Bahasa Melayu

Sinopsis

Kursus ini disediakan untuk pelajar mempelajari asas bahasa Melayu. Pelajar didedahkan kepada kemahiran mendengar, membaca, bercakap dan menulis, asas perbendaharaan kata, tatabahasa, bentuk ayat dan tulisan. Pelajar didedahkan dengan situasi harian sebenar yang membolehkan mereka berkomunikasi menggunakan bahasa Melayu mudah.

Rujukan

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 11202 Bahasa Arab

Sinopsis

Kursus ini disediakan untuk pelajar mempelajari asas Bahasa Arab. Pelajar didedahkan kepada kemahiran mendengar, membaca, bertutur dan menulis asas perbendaharaan kata, tatabahasa, bentuk ayat dan tulisan. Pelajar juga didedahkan dengan situasi harian sebenar untuk membantu mereka berkomunikasi menggunakan bahasa Arab.

Rujukan

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)
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7. Mohd Azani Ghazali, Abdul Aziz Hassan @ Yahya. 2000. *Kamus ringkas Bahasa Melayu- Bahasa Arab.* Johor Bahru: Jahabersa. (PL5091.8 .A7 .M393 2000 rd)

UWB 10802 Bahasa Jepun

Sinopsis

Kursus ini disediakan untuk pelajar mempelajari asas bahasa Jepun. Pelajar didedahkan kepada kemahiran mendengar, membaca, bercakap dan menulis, asas perbendaharaan kata, tatabahasa, bentuk ayat dan tulisan. Pelajar didedahkan dengan situasi harian sebenar yang membolehkan mereka berkomunikasi menggunakan bahasa Jepun mudah.

Rujukan

1. M. Rajendran, (1991) *Malay Japanese English Dictionary*, Petaling Jaya: Pelanduk Publications. (PL5125 .R34 1991rd).
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6. Surie, Network (2009). *AE Minna no Nihongo 1-1 Elementary: Translation and Grammatical Notes,* Tokyo: 3A Corporation. (PL539.3 .M567 2009)
7. Surie, Network (2009). *AE Minna no Nihongo 1-2 Elementary: Main Textbook*, Tokyo: 3A Corporation. (PL539.3 .M569 2009)
8. Surie, Network (2010). *AE Minna no Nihongo 1-2 Elementary: Translation and Grammatical Notes*, Tokyo: 3A Corporation. (PL539.3 .M57 2010)
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UWB 10702 Bahasa Jerman

Sinopsis

Kursus ini disediakan untuk pelajar mempelajari asas bahasa Jerman. Pelajar didedahkan kepada kemahiran mendengar, membaca, bercakap dan menulis, asas perbendaharaan kata, tatabahasa, bentuk ayat dan tulisan. Pelajar didedahkan dengan situasi harian sebenar yang membolehkan mereka berkomunikasi menggunakan bahasa Jerman mudah.

Rujukan

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 11102 Bahasa Sepanyol

Sinopsis

Kursus ini disediakan untuk pelajar mempelajari asas bahasa Sepanyol. Pelajar didedahkan kepada kemahiran mendengar, membaca, bertutur dan menulis asas perbendaharaan kata, tatabahasa, bentuk ayat dan tulisan. Pelajar juga didedahkan dengan situasi harian sebenar untuk membantu mereka berkomunikasi menggunakan bahasa Sepanyol.

Rujukan

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 11302 Bahasa Jawa

Sinopsis

Kursus ini disediakan untuk pelajar mempelajari asas bahasa Jawa. Pelajar didedahkan kepada kemahiran mendengar, membaca, bercakap dan menulis, asas perbendaharaan kata, tatabahasa, bentuk ayat dan tulisan. Pelajar didedahkan dengan situasi harian sebenar yang membolehkan mereka berkomunikasi menggunakan bahasa Jawa mudah.

Rujukan

1. Majendra, Maheswara (2010). *Kamus lengkap Indonesia-Jawa, Jawa-Indonesia/ Majendra Maheswara*. Pustaka Mahardika. XX(131732.1)
2. Yrama, Widya (2008). *Cara belajar membaca dan menulis huruf jawa, jilid 1* . Yrama Widya. Publication info:, 2008 XX(131738.1)
3. Budhi Santosa, Iman. (2010). *Nguri-uri paribasan Jawi = Melestarikan peribahasa Jawa.* Intan Pariwara. XX(131751.1)
4. Purwanto, Eko (2011). Pepah Bahasa Jawi. Cara mudah belajar cepat dan tuntas bahasa Jawa. Diva press. XX(131748.1)

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 chemical motions includes free oscillations and force oscillations. Laplace Transforms: Definition. Linearity. First shift theorem. Multiplying by tn. 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. No. panggilan: TA330 .A38 2011
3. Stroud, K. A., Booth, D. J. (2007). Advanced Engineering Mathematics. 4th Ed. USA: Palgrave Macmillan. No. panggilan: QA39.3 .S77 2003
4. Stroud, K. A., Booth, D. J. (2007). Engineering Mathematics. 6th Ed. USA: Palgrave Macmillan. No. panggilan: TA330 .S77 2007
5. Chapra, S. C. and Canale R. P. (2011). Numerical Methods for Engineers. 6th Ed. Boston. McGraw-Hill. No. panggilan: TA345 .C47 2010

BNP 21002 Creativity and Innovation

Synopsis

The course is taught through a combination of lectures, assignments and projects. The lectures introduce the student to the concept of creativity and innovation and creative problem solving. The student will be exposed to the idea generation and selection. Project works and assignments provide the creative thinking skill in handling daily problems. Projects also promote student's ability in conducting literature research and self-learning. The topics studied are; Introduction To Creativity and Innovation, Creativity and Innovation In The Real world, Creative Problem Solving, Problem Definition, Information Gathering, Problem Statement, Diverging, Converging And Application Of Process.

References

1. Noor Khazanah, Norazizah. (2014): Modul Pengajaran : Creativity and Innovation. UTHM Publisher.
2. Bernacki, E. (2002). Wow! That's a Great Idea!: Insight, Idea, Opportunity, Action. Prentice Hall. Call number: HD53 .B47 2002
3. De Bono, Edward. (2003). Serious Creativity 1: Lateral Thinking Tools, Techniques and Application. Allscript Establishment. Call number: BF408 .D366 2003
4. De Bono, Edward. (2003). Serious Creativity 2: The Need for Creative Thinking and the Application of Creative Thinking. Allscript Establishment. Call number: BF408 .D367 2003
5. Lanny, D.S. (2005). The Engineering of Chemical Reaction, Oxford University Press, USA. Call Number: TP157 .S35 2005
6. Tapio O. Salmi, Jyri-Pekka Mikkola, Johan P. Warna. (2011). Chemical Reaction Engineering and Reactor Technology. Boca Raton: CRC. Call Number: TP157 .S24 2011

BNP10303 Fluid Mechanics

Synopsis

With basic principles in fluid mechanics, engineers can study and analyse all sorts of fluid-related problems, ranging from application of static and dynamics of fluid to pipe networks. This course introduces students to the principles of fluid mechanics and application of the theory to typical civil engineering problems including flow in pipes, fluid measurement, and calculation of fluid forces. Scope of study includes introduction to basic fluid mechanics, analysis of flow, conservation principles, dimensional analysis and similitude, surface flow, flow in conduits and compressible flow.

References

1. Bullet, Shaun (2016). Fluid and Solid Mechanics. SG: World Scientific Publishing Company. Call No: QA805. F58 2016
2. Jog, C. S. (2015). Fluid mechanics: foundations and applications of mechanics. Call No: QC145.2. J64 2015
3. Kundu, Pijush K. Cohen, Ira M. Dowling, David R. (2012) Fluid mechanics. Call No.: QA901. K86 2012
4. White, Frank M. (2008) Fluid Mechanics, 6th Edition. McGraw-Hill, Call No: TA357. W44 2011
5. Cengel, Y. A. and Cimbala, J. M. (2006) Fluid Mechanics: Fundamentals and Applications. McGraw Hill.Call No: TA357 .C46 2010
6. Gupta, S. C. (2006) Fluid mechanics and hydraulic machines. Pearson. Call No: TA357. G86 2006
7. Fox R.W. and Mc Donald A.T. (2004) Introduction to Fluid Mechanics. John Wiley & Sons, Inc., 6th Edition. Call No: TA357. F69 2010
8. Douglas, John F. (2005) Fluid Mechanics, 5th Edition. Pearson, Call No: TA357. E53 2010

BNB 31503 Building Science and Sustainability

Synopsis

Building science and sustainability will give an essential look at the building surrounding environment. This course introduces students to the important of lighting, ventilating, acoustic, indoor environmental quality, energy efficiency and sustainability in terms of the concepts design and system applications. Scopes of study includes fundamental, principles, basic theories and calculation and design methodology.

References:

1. Randall Mcmullan; Environmental Science in Building, fifth edition; New York: Palgrave, 2012.
2. David V. Chadderton; Building Services Engineering: fifth edition; Taylor & francis, 2007. Call number TH6010 .C42 2017.
3. Peter Gevorkian; Sustainable Energy System Engineering: The complete green building design resources; New York: McGraw Hill, 2007.
4. Eckard Mommertz; Acoustics and sound insulation: principles, planning, examples; Boston, MA: Birkhauser, 2009. Call Number NA2800 .M65 2009
5. Eberhard Hansler & Gerhard Schmidt Hoboken; Acoustic echo and noise control: a practical approach; NJ: John Wiley, 2014. Call Number TK5102.98 .H36 2004
6. David Coley; Energy and climate change: Creating a sustainable future; England: John Wiley & Sons, 2008.
7. Kathleen Hess-Kosa; Indoor air quality: sampling methodologies; Boca Raton: Lewis Pub., 2002. Call Number TD890 .H47 2012
8. John D. Spengler, Jonathan M. Samet, John F. McCarthy; Indoor air quality handbook; New York: McGraw-Hill, 2001. Call Number RA770 .I42 2013

BNP 21103 Construction Engineering Technology & Management

Synopsis

The construction industry is continually adopting new and improves technologies for increasing productivity and quality to meet present and future needs of human kind. Construction engineering technology and management addresses the needs of improving the technology through application of fundamental of science and engineering. This course introduces students to development of construction project, building construction, site management, project management and organization, planning and scheduling project, project time, cost and quality control.

References

1. Noor Khazanah, Teknologi Pembinaan Sturktur Bangunan, 2019, Dewan Bahasa dan Pustaka.
2. R.L. Peurifoy et al, Construction Planning, Equipment and Methods, 6th Edition. Mc Graw Hill, 2002.Call Number TH145 .P48 2011
3. J.W. Hinze, Construction Safety, Prentice Hall, 1997. Call Number TH145 .N86 2011
4. S.W. Nunnally, Construction Methods and Management, 5th Edition, Prentice Hall, 2001. Calling Number TH145 .N86 2011
5. Roger Greeno (2004). Building Construction Handbook, 5th Edition; London: Butterworth-Heinemann. Calling Number TH151 .C58 2004 r
6. Levy, Sidney M. Project management in construction . Call No.: HD9715.A2 .L48 2012
7. Hinze, J.W; Construction Planning and Schedulling; New Jersey: Prentice Hall, 2003. Call No.: TH438.4 .56 8 2008

Year 2 Sem 1

UHB20102 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. PE1128N85 1995 N2.
6. Shipside, S. (2007). *Effective communication: Get your message across nd learn how to listen*. London: Dorling Kindersley. HF5718.S54 2007.

UQ*1xxx1 Co-Curriculum II

Sinopsis

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

BWM22502 Statistics for Engineering Technology

Synopsis

Random Variables: Discrete and continuous random variables, probability distribution functions, cumulative distribution functions, expected values and variances. Special Probability Distributions: 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.

BNP20103 Hidraulik dan Hidrologi

Synopsis

Hydraulics and hydrology involve in analysis and practical of water resources technology through sustainable approach. This course develops students understanding in hydraulics and hydrology concepts and components. Scope of study includes: uniform and non-uniform flow in open channel, hydraulic machines, basic concept of hydrology, precipitation, evaporation, transpiration, infiltration and characteristics and modelling of surface runoff.

Rujukan

1. Sturm T. W. (2001). *Open Channel Hydraulics.* Boston: McGraw-Hill. [TC175 .S78 2001 N1]
2. Jain S. C. (2001). *Open Channel Flow*. New York: John Wiley & Sons. [TC175 .J34 2001 N1]
3. Chin D.A. (2000). *Water Resources Engineering*. Prentice Hall. [TC160 .C54 2000]
4. Mays, L. W. (2007). *Water Resources Sustainability*. New York: McGraw-Hill. [TC405.W37 2007]
5. Prakash, A. (2004). *Water Resources Engineering: Handbook of Essential Methods and Design*. Reston, VA: ASCE Press. [TC145.P73 2004]
6. McCuen, R. H. (2005). *Hydrologic Analysis and Design*, 3rd ed. Upper Saddle River: Prentice Hall. [TC145.M38 2005]
7. Parr, N. M., Charles, J. A. & Walker, S. (Ed) (1992). *Water Resources and Reservoir Engineering*. London: Thomas Telford. [TC145.W38 1992]

BNP 20203 Mechanics of Material

Synopsis

Mechanics is the body of knowledge that deals with the relationships between forces and the motion of points through space, including the material space. Material science is the body of knowledge that deals with the properties of materials, including their mechanical properties. This course introduces students to simplify the affect of material and geometric properties when the structure is loaded with outside and internal forces. Scope of this course includes the analysis and design of structural members subjected to axial loads, torsion and bending, as well as such fundamental concepts as stress and strain, deflections of beams, behaviour of columns and statically determinate plane truss.

References

1. Ferdinand P. Beer et al. (2009). Mechanics of Materials. Boston, MA: McGraw-Hill. [TA405, M45 2009]
2. James M. Gere & Barry J. Goodno (2009). Mechanics of Materials. New York: Wadsworth/ Cengage Learning. [TA405, G47 2009]
3. Ansel C. Ugural (2008). Mechanics of Materials. Hoboken, NJ: John Wiley. [TA405, U38 2008]
4. William F. Riley, Leroy D. Sturges & Don H. Morris (2007). Mechanics of Materials. Hoboken, NJ: John Wiley. [TA405, R54 2007]
5. Ferdinand P. Beer, E. Russell Johnston & John T. DeWolf (2006). Mechanics of Materials. New York: McGraw-Hill. [TA405, B44 2006]

BNP 20402 Keselamatan dan Kesihatan Pekerjaan

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.

Rujukan

1. Occupational Safety and Health Act and Regulations. MDC Publishers Printer Sdn. Bhd. 2001. No. panggilan: KPG1390.M34 2001 rw N2.
2. Factories and Machinery Act & Regulations. MDC Publishers Printer Sdn. Bhd. 2001. No. panggilan: KPG1390.A31967 .A4 2001 rw N1.
3. Ismail Bahari (2006). Pengurusan Keselamatan dan Kesihatan Pekerjaan. Edisi ke-2. McGraw Hill Education (Malaysia). No. panggilan: T55.I85 2006.
4. Davies, V. J. and Tomasin K. (2006). Construction Safety Handbook. 2nd ed. London: Thomas Telford. No. panggilan: TH443.R43 2006.
5. Anton, Thomas J. (2009). Occupational Safety and Health Management. 3rd ed. New York: McGraw-Hill. No. panggilan: T55.A57 1989.

BNP 21403 Introduction to Environmental Engineering Technology

Sinopsis

The environmental technology comprises the environmental act and regulation applied in Malaysia, the important physical, chemical and biological parameters in water and wastewater analysis, operates and maintains the water, wastewater, solid waste and hazardous waste plants. The treatment technology applied to have a clean, bacteriologically safe, potable drinking water and enhances public health. This course covers the technology related to water treatment, wastewater treatment, solid waste disposal and air pollution.

References

1. Davies, M.L et. al. Principles of Environmental Engineering and Science; McGraw Hill; 2004. No. panggilan: TD145 .D38 2009
2. Basak, N.N. Environmental Engineering, Tata McGraw-Hill; 2003. No. panggilan: TA170 .R83 2001
3. Edward S. Rubin. Introduction to Engineering & the Environment. McGraw Hill; 2001. No. panggilan: TA170 .R83 2001 N4
4. Bishop P.L. Pollution Prevention: Fundamentals and Practice; McGraw Hill; 2000. No. panggilan: TD897 .B57 2000
5. Nicholas P. Cheremisinoff. Handbook of Water and Wastewater Treatment Technology; Butterworth-Heinemann, 2002. No. panggilan: TD430 .C53 1995 N1

BNB31103 Building Services Technology and Design

Synopsis

This course is intended to prepare the target students with the ability to recognize the principles of building services systems and understand the coordination/management of design/installation of various building services systems.

References:

1. Building Services Design Management. Portman, Jackie, 2014. Call Number: TH438 .P67 2014.
2. Sustainable Building Services: Principles, Systems, Concepts. Lenz, Bernhard, 2011. Call Number: NA2542.36 .L46 2011

3. Building Services Engineering: After Design, During Construction. Portman, Jackie, 2016. Call Number: TH438.P67 2016
4. Guide to Building Control: For Domestic Buildings. Gwynne, Anthony, 2013. Call Number: TH420 .G89 2013
5. Handbook of Green Building Design and Construction: LEED, BREEAM, and Green Globes. Kubba, Sam, 2017. Call Number: TH880 .K82 2017

Year 2 Sem II

UQU 10702 Appreciation, Ethics and Civilization

Sinopsis

Kursus ini memfokuskan tentang konseptual dan praktikal hubungan etnik dalam kerangka masyarakat Malaysia. Perbincangan adalah merangkumi konsep-konsep asas hubungan etnik dan diteruskan dengan penyelusuran sejarah pembinaan masyarakat plural. Selain itu, turut disentuh ialah perlembagaan sebagai teras kehidupan bermasyarakat. Perbincangan juga meneliti hubungkait pembangunan dengan etniksiti dari aspek ekonomi, politik dan sosial berdasarkan pendekatan *top-down* dan *bottom-up* oleh kerajaan serta masyarakat.

Rujukan

1. Lembaga Penyelidikan Undang-undang (2003).*Perlembagaan Persekutuan*. Petaling Jaya: International Law Book Services. No. Panggilan: KPG 1744.51963.A3.A4 2003 rw
2. Mansor Mohd. Noor, Abdul Rahman Abdul Aziz dan Mohamad Ainuddin Iskandar Lee (2006). *Hubungan Etnik di Malaysia*. Petaling Jaya: Prentice Hall. No. Panggilan: DS595.m37 2006
3. Nazri Muslim & Nasruddin Yunus. (2006). *Hubungan Etnik*. Selangor: Fulson Trading Co. [UTHM Library request]
4. Shamsul Amri Baharuddin (2007). *Modul Hubungan Etnik*. Shah Alam: Universiti Teknologi MARA. [Modul Hubungan Etnik]
5. Zaid Ahmad, Ho Hui Ling, Sarjit Sing Gill, Ahmad Tarmizi Talib, Ku Halim Ku Arifin, Lee Yok Fee, Nazri Muslim dan Ruslan Zainuddin (2006). *Hubungan Etnik di Malaysia*. Shah Alam: Oxford Fajar Sdn. Bhd. [UTHM Library request]

BNP 21502 Entrepreneurship

Synopsis

This course covers various topics related to basic entrepreneurship including introduction to entrereneurship, 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. Ali, R. (2019). Entrepreneurship. Modul pengajaran. Penerbit UTHM
2. Ariffin, S, Hamidon (2017). Introduction to entrepreneurhsip. Oxford Fajar, Kuala Lumpur.
3. Barker, Melissa S. (2013). Social media marketing: a strategic approach. South Western, OH: Cengage. Call number: HF5415.1265.S62 2013
4. Siri bijak mengurus wang (2012). Meneroka perniagaan kecil-kecilan. Time edition, Selangor. Call number: HG4529.5.SBI
5. Charles E. Ba,ford, Garry D. Bruton (2011). Entrepreneurship: a small business approach. New York: McGraw Hill. Call number: HD62.5.B35 2011

BNP20803 Structure Analysis and Design

Synopsis

Structural Analysis: Introduction to loads, and the analysis of statically determinate and indeterminate structures. The types of structures covered include beams, trusses, frames, cable and arches that are loaded in the plane of the structure. Steel Design: Some introduction on steel design. This topics will cover on basis of steel design and section classification. Reinforced Concrete Design: Analysis, design, and detailing of elementary concrete structures. Topics include various types of beam and slab.

References

1. Hibbeler R.C.; Structural Analysis; 5th Edition, Prentice Hall, USA; 2002. Call No.: TA645.H53 2002.
2. William, Alan; Structural Analysis; in theory and practice. Call No.: TA 645.W55 2009.

3. Aslam Kasimali; Structural Analysis, Thomson Engineering 3, Edition 2004. Call No.:
4. M.L. Gambhir; Stability Analysis and Design of Structures, Springer, 2004, Call No.: TA684.S64 2002.
5. British Standard BS 5950: Part 1, Structural Use of Steelwork In Building: Code of Practise for Design in Simple and Continous Construction; Hot Rolled Sections, SC1 2000.
6. W.H Mosley, J.H Bungey, R.Hulse. Reinforced Concrete Design, Palgrave, New York, 1999. Call No.:TA 683.2.M68 2007.
7. Chanakya Arya. Design of Structural Elements; Spoon Press, New York 2003. Call No.: TA683.2. M68 2007.
8. Hassan Al Nageim; Steel Structures Practical Design Studies, Taylor & Francis Ltd, 3rd Revision 2005. Call No.: TA 645.H37 2005.

BNP20903 Soil Mechanics and Foundation

Synopsis

This course introduces students to the fundamental properties and mechanics of soils, particularly with regard to both laboratory and field characterisation of soils for civil engineering works, including compaction adn permeability (chap. 1). This is followed by an introduction to soils' responses under various loading conditions, covering topics on the estimations of bearing capacity, settlement, lateral earth pressures and stability of slopes (chap. 2). For the design of commonly found geo-structures, namely shallow and deep foundations, dams and embankments as well as retaining structures, students are given an overview and taught the key factors for consideration in producing efficient designs (chap. 3). The course also takes into account contemporary soil-related issues, i.e. problematic soils (chap. 4) and geo-environmental concerns (chap. 5). The former places emphasis on the widely adopted pre-treatment techniques for both granular and fine-grained soils, e.g. stabilisation and modification, densification and use of geosynthetics, while the latter highlights issues and the handling of soil contaminations and waste containments, with a conclusion on the way forward with innovative solutions.

References

1. Budhu, M. (2007). "Soil Mechanics and Foundations, 2nded." John Wiley & Sons, Inc., USA.
2. Das, BM. (2011). "Principles of Foundation Engineering, 6thed." Thompson Canada.
3. Liu, C and Evett, JB. (2008). "Soils and Foundations, 7th ed." Pearson International, University of North Carolina, Charlotte, USA.
4. McCarthy, DF. (2007). "Essentials of Soil Mechanics and Foundations: Basic Geotechnics, 7thed." Pearson International, New Jersey, USA. [TA710 .M39 2007]
5. Mitchell, JK. and Soga, K. (2005). "Fundamentals of Soil Behaviour, 3rded." John Wiley & Sons, Inc., USA.
6. Rajapakse, R. (2008). "Pile Design and Construction: Rule of Thumb, 1sted." Elsevier Inc. Oxford, UK.
7. Salgado, R. (2008). "The Engineering of Foundation." McGraw Hill International Edition, New York, USA.

BNP 21203 Construction Contarct & Procurement

Synopsis

Contract law and contract administration procedures in building construction are essential in order to ensure the project success. This course introduces students to th construction law, building law and common contract administration procedures. The a is to provide knowledge and understanding about legal and contract administration procedures in building and civil engineering projects. Scopes of study includes introduction to Malaysian contract law, forming of contract, discharge of contract and remedies,

Civil engineering contract procedure, classification of construction contract and Civil engineering cost estimation.

References

1. Mindy Chen-Wishart, Contract law; 2nd Edition, Oxford: Oxford University, 2008. Call No.: KD1554 .C43 2008 Young, Max. Understanding contract law. Call No.: KD1554 .Y68 2010
2. Ashworth, Allan, Contractual procedures in the construction industry; 5th Edition, Harlow: Pearson, 2006. Call No.: KD1641 .A83 2006.
3. Akta Kontrak 1950 (Akta 136) & Akta Kontrak Kerajaan 1949 (Akta 120) (Hingga 20th Januari 2005); International Law Book Services, Selangor, Malaysia, 2005. Call No.: KPG804.5195 .A4 1987 rw N2
4. Malaysia Malaysia. Legal Research Board. Akta Kontrak 1950 (Akta 136) dan Akta Kontrak Kerajaan 1949 (Akta 120) : (hingga 5hb Jun 2003). Call No.: KPG804.5195 .A4 2003 rw
5. Ahamad Abdullah dan Khairuddin Abdul Rashid; Pengukuran Kuantiti Bangunan (Beserta Contoh Kerja Berdasarkan SMM2); Kuala Lumpur: Prentice Hall, 2003. Call No.: TH435 .A32 2003
6. Malaysian Standard Method of Measurement of Building Works; 2nd Edition, The Institution of Surveyors, Malaysia, 2000.
7. Jabatan Kerja Raya Malaysia; Borang Kontrak Setara JKR 203A (Semakan 1/83).

BNP21303 Geomatic Engineering Technology

Synopsis

Surveying or Geomatic has been important since the beginning of the civilization. Its earliest application was in measuring and marking boundaries of property ownership. Today, Geomatic engineering is widely used in civil engineering such as in planning, construct and maintain highways, railroads, buildings, bridges,dams, pipelines, drainage works, water supply and sewage systems. Scope of study include introduction to engineering geomatics, traverse survey, levelling works, detail surveying, area and volume calculation.

References

1. Kavanagh, B.F. and Glenn Bird S.J.; Surveying: Principles & Applications, 6th Edition; Prentice Hall, USA; 2003.
2. Paul R. Wolf and Charles D. Ghilani; Elementary Surveying-An Introduction to Geomatics; 10th Edition; Prentice Hall; 2002.
3. Francis H. Moffit and John D. Bossler; Surveying; 10th Edition, Addison Wesley; 2001.
4. H. Moffit and John D. Bossler; Surveying; Francis 10th Edition, Addison Wesley; 2001.
5. Masiri Kaamin dan Abd. Sukor Sarif; Kejuruteraan Geomatik I. Monograf; Batu Pahat: Fakulti Kejuruteraan Awam & Alam Sekitar, KUiTTHO; 2006.
6. Masiri Kaamin dan Abd. Sukor Sarif; Kejuruteraan Geomatik II. Monograf; Batu Pahat: Fakulti Kejuruteraan Awam & Alam Sekitar, KUiTTHO; 2006.
7. Stephen V. Estopinal; A guide to understanding land surveys, Hoboken, NJ: J. Wiley; 2009.

BNB 31703 Water, Drainage and Plumbing System

Synopsis

This course introduces students to the principles, design, operation and maintenance systems for water supply, drainage and gas services in buildings. Scopes of study includes fundamentals of demand theory, pumps, cold and hot water supply, sanitation, drainage, sewage and refuses disposal, and piped gas in buildings.

References:

1. Water and Wastewater Engineering, Davis, 2017. McGraw-Hill Education.
2. Water Engineering; Hydraulic, Distribution and Treatment, 1st Edition, Nazih K. Shammas & Lawrence K. Wang, 2016, John wiley & Sons, Inc.
3. Water Supply Engineering, Subhash Verma, Varinder S Kanwar & Siby John, 2015, Vikas Publishing House Pvt. Ltd.
4. Handbook of Water and Wastewater Treatment Plant Operations, 3rd Edition, Frank R. Spellman. 2014, Taylor & Francis Group, LLC, CRC Press.
5. Transmission Pipeline Calculations and Simulations Manual, E. Shashi Menon, 2014, Gulf Professional Publishing.
6. Pipelines for Water Conveyance and Drainage, Roger W. Beieler, 2013, American Society of Civil Engineers.
7. Monitoring Water Quality; Pollution Assessment, Analysis, and Remediation, Satinder Ahuja, 2013, Elsevier.
8. Pump Characteristics and Applications, 3rd Edition, Michael Volk, 2014, Taylor & Francis Group, LLC, CRC Press.
9. MDC Legal Advisers; Uniform Building By-laws (all Amendments Up To September 2013)
10. Uniform Technical Guidelines for Water Reticulation and Plumbing, National Water Services Commission.

Year 3 Sem I

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 ed.). Boston, MA: Pearson. LB1028 .B63 2007.
2. Chandra, S. (2013). Research methodology. Oxford, U.K.: Alpha Science Intl Ltd. 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. HD30.4 .F37 2012.
5. Hittleman, D. R. (2006). Interpreting educational research: An introduction for consumers of research (4th ed.). Upper Saddle River, NJ: Pearson. LB1028 .H57 2006.
6. Newby, P. (2014). Research methods for education (2nd ed.). Abingdon: Routledge. LB1028.N48 2014.
7. Neville, C. (2010). The complete guide to referencing and avoiding plagiarism. Maidenhead: Open University Press. PN171.F56 .N48 2010.
8. Scruggs, T. E. (2006). Applications of research methodology. Oxford: Elsevier. LC4704, 66 2006.
9. Sekaran, U. (2013). Research methods for business: A skill-building approach (6th ed.). Chichester, West Sussex: Wiley. HD30.4 .S44 2013.
10. Somekh, B. (2006). Action research: a methodology for change and development. Berkshire: Open University Press. LB1028.24 .S65 2006.

BNP 20303 Highway Technology and Traffic Management

Synopsis

To provide understanding and equip students with basic knowledge about concepts on highway technology, material testing, pavement design, highway construction, pavement maintenance, highway drainage systems and principles of traffic engineering. Aspects related to traffic engineering including overview of traffic flow, traffic control and traffic management shall be covered.

Rujukan

1. Jabatan Kerja Raya Malaysia, Interim Guide to Evaluation and Rehabilitation of Flexible Road Pavements, Ibu Pejabat JKR, Kuala Lumpur, 1994.
2. Jabatan Kerja Raya Malaysia, A Guide to Visual Assessment of Flexible Pavement Surface Conditions, Ibu Pejabat JKR, Kuala Lumpur, 1992.
3. Jabatan Kerja Raya Malaysia, Standard Specification for Road Works, Ibu Pejabat JKR, Kuala Lumpur, 1988.
4. Jabatan Kerja Raya, Arahan Teknik (Jalan) 5/85, Manual on Pavement Design, Ibu Pejabat JKR, Kuala Lumpur, 1985.
5. Flaherty C.A., The Location, Design, Construction & Maintenance of Pavements, Butterworth Heinemann, United Kingdom, 2002. No. panggilan: TE145 .H53 2002
6. Garber N.J, Hoel L.A., Traffic and Highway Engineering, 3rd Edition, California, Brooks/Cole, 2002. No. panggilan: TE145 .G37 2009
7. Rogers M, Highway Engineering, 1st Edition, Blackwell Publishing. United Kingdom. 2003. No. panggilan: TE23 .H53 2009
8. Huang, Yang H., Pavement Analysis and Design, 2nd Edition, Pearson, Prentice Hall, USA, 2003. No. panggilan: TE251 .Y36 2003

BNP 30202 Software Application for Engineering Technology

Synopsis

This course introduces students with common civil engineering software which are widely used in managing and coordinating systematic project construction activities, analyzing and designing of RC structures, steel structure and project planning application software. This course is designed for students to learn Reinforced Concrete Design Software: Autodesk Revit Structure, Structural Analysis: Staad-pro and Project Planning: Microsoft Project.

Rujukan

1. Esteem 7.0 User Manual 7.0; Esteem Innovation Sdn. Bhd.
2. STAAD. Pro 2007 Getting Started Manual; Research Engineers, Intl.; USA.
3. STAAD. Pro 2007 Technical Reference Manual; Research Engineers, Intl.; USA.
4. Atchison, Sonia. Using Microsoft Project 2010. Indianapolis, Ind. Que Pub. 2011.
5. Autodesk Revit Structure 2019 User Manual
6. Atchison, Sonia. Using Microsoft Project 2010. Indianapolis, Ind. Que Pub. 2011.

BNB 32103 Heating, Ventilating and Air Conditioning (HVAC)

Synopsis

This subject provides comprehensive technical information in a modular form to heating, ventilating and air conditioning (HVAC) practitioners. This subject also provides understanding of fundamentals of heat transfer, ventilation system and solving problems of design, installation and operation of HVAC for future technologist.

References:

1. Modern Geothermal Hvac Engineering and Control Applications, Jay Egg, New York: McGraw-Hill Professional Pub. Call number TH7417.5.E33 2013.
2. Testing and balancing HVAC air and water systems, 5th edition, Samuel C Sugarman, The Fairmont Press, Inc. Call number TH7015.S93 2014.
3. Fundamentals of HVACR, 2nd edition, Carter Stanfield, Prentice Hall. Call number TH7012.S82 2013.
4. HVAC water chillers and cooling towers: fundamentals, application, and operation, 2nd edition, Herbert Stanford w., Call number TH7687.7.S72 2012.
5. Mechanical and electrical equipment for buildings, 11th edition, Walter Grondzik, John Wiley. Call number TH6010 .M42 2010.

BNB 31303 Operation and Maintenance Management

Synopsis

Operations and Maintenance Management encompasses all spectrum of services required to assure the built environment will perform the functions for which a facility was designed and constructed. Operations and maintenance typically includes the day-to-day activities necessary for the building and its systems and equipment to perform their intended function. Operations and maintenance are combined into the common term O&M because a facility cannot operate at peak efficiency without being maintained; therefore the two are discussed as one.

References:

1. Fennimore, John P. (2014). Sustainable Facility Management : Operational Strategies for Today. Boston : Pearson, 2014. Call Number: TS155 .F46 2014
2. Levitt, Joel D. (2013). Facilities Management : Managing Maintenance for Buildings and Facilities. New York: Momentum, 2013. Call Number: TS177 .L48 2013
3. Clements-Croome, Derek (2013). Intelligent buildings : Design, Management and Operation. London : ICE, 2013. Call Number: TH6012 .I57 2013
4. Grondzik, Walter T. (2015). Mechanical and Electrical Equipment for Buildings. Hoboken: John Wiley, 2015. Call Number: TH6010 .M42 2010
5. Wood, Chris (2013). Practical Building Conservation: Roofing. Burlington, VT : Ashgate, 2013. Call Number: TH2401.P72 2013

BNB 31403 Electricity & Energy Supply

Synopsis

Electric and energy is used every day in many different ways. To become a more environmentally friendly society, students will have a basic understanding of the various types of electricity and energy and how it is obtained. Everyone should know electrical supply, transmission and distribution system. Alternative energy sources are available that do not pollute the environment and how this energy can be converted into a useful power supply.

References:

1. M Azli Yusop, Siti Amely Jumaat, Megat Azahari Chulan; Electrical technology: (DEE 1113); Batu Pahat: Penerbit Universiti Tun Hussein Onn Malaysia, 2007. Call Number TK146 .A94 2007 a
2. Sustainable energy conversion for electricity and co-products: principles, technologies, and equipment, Ashok Rao, John Wiley. Call number TK1005 .R37 2015.
3. Saving energy and reducing CO_2 emissions with electricity, Clark W.Gellings, Taylor & Francis, Call number TK4015 .G44 2011.
4. Renewable electricity and the grid: The challenge of variability, 2nd edition, Godfrey Boyle, Earthscan. Call number TJ808 .R49 2011.
5. Energy and environmental engineering, Chuck Lancaster, New York Callisto. Call number TJ163.2 .E535 2015.
6. Renewable energy and sustainable design, Scott Grinnell, Cengage Learning. Call number NA2542.3 .G76 2016.
7. Fundamentals of electric power engineering, Isaak D. Mayergoyz, World Scientific. Call number TK1001 .M39 2014.
8. Allan R. Hambley; Electrical Engineering: Principles and Applications; Prentice Hall, 2011. Call Number TK146 .H35 2011.

BNB 40503 Acoustic dan Lighting (Elective I)

Synopsis

Acoustic and lighting technologies will give an essential look at the building interior finishes. This course introduces students to the important of acoustic and lighting in building in terms of the system applications and concepts design. Scopes of study includes acoustical parameters, basic theories and calculation, building noise control and design methodology, lighting terminology, daylight lighting calculations and lighting design.

References

1. Eckard Mommertz; Acoustics and sound insulation: principles, planning, examples; Boston, MA: Birkhauser, 2009. Call Number NA2800.M65 2009

2. Eberhard Hansler& Gerhard Schmidt Hoboken; Acoustic echo and noise control: a practical approach; NJ: John Wiley, 2004. Call Number TK5102.98 .H36 2004
3. Brian John Smith, R J Peters& Stephanie Owen; Acoustics and noise control;3rd ed., Essex: Addison Wesley, 2006. Call Number NA2800 .S64 2012
4. Bernard Grehant; Acoustics in buildings; London: T. Telford, 1996. Call Number
5. David A Haris; Noise control manual for residential buildings; New York: McGraw-Hill, 2007. Call Number TH1725. H37 2010.
6. Building services handbook: incorporating current building and construction regulations, 5th edition, Fred Hall, Butterworth-Heinemann. Call number TH151 .H34 2010.

BNB 41103 Advanced Building Services Technology (Elective I)

Synopsis

Advanced building services technology has been introduced and applied to the surrounding building design. This course bring students on managing building services, hardscape and softscape, road and car parks, underground utilities, special services/ disabilities facilities and Building Management System (BMS).

References:

1. Mechanical and electrical equipment for buildings, 11th edition, Walter Grondzik, John Wiley. Call number TH6010 .M42 2010.
2. Building services design management, Jackie Portman, Wiley Blackwell. Call number TH438 .P67 2014.
3. Sustainable building services: principles, systems, concepts, Bernhard Lenz, GmbH & Company. Call number NA2542.36 .L46 2011.
4. Building services design for energy efficient buildings, Paul Tymkow, Routledge. Call number TH880 .B84 2013.
5. Building services handbook: incorporating current building and construction regulations, 5th edition, Fred Hall, Butterworth-Heinemann. Call number TH151 .H34 2010.
6. Department of Occupational Safety and Health (DOSH); Code of Practice on Indoor Air Quality, 2005.
7. Sven Stremke; Sustainable energy landscape: designing, planning and development; Taylor & Francis, 2013; Call number SB472.45.S97 2013.

Year 3 Sem II

BNP 30402 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

BNP 30103 Bachelor Degree Project 1

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. Problems and cases at works that experienced by the students during their internship programme 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.

BNP 30302 Engineering Technologists and Society

Synopsis

Engineering technologist work to develop economic and safe solutions to practical problems, by applying mathematics, scientific knowledge and ingenuity while considering technical constraints. The work of engineering technologist is the link between perceived needs of society and commercial applications. This course introduces the student the importance of engineering technologist in society and role of engineering technologist in different sector. The scope of the course are introduction to engineering technologist & society, engineering technologist and organisation, relationship of humanisation in engineering technologist management, research and development, engineering technologist and private sector and professional talk.

References

1. Babcock D.L. (2002). Managing Engineering and Technology: An Introduction to Management for Engineers, Prentice Hall; Englewood Cliffs, NJ. No. panggilan: TA190 .B32 2002
2. Martin, M. W. & Schinzinger, R. (2010). Introduction to Engineering Ethics. McGraw Hill, New York. No. panggilan: TA157 .M37 2010
3. Raymond Spider. (2001). Ethic, Tools and the Engineer, CRC Pres LLC. No. panggilan: BJ59 .S64 2001
4. Narayanan, V.K. (2001). Managing Technology and Innovation for Competitive Advantage, Prentice Hall. No. panggilan: T49.5 .N37 2001
5. Bertens, K. (2003). Etika dan moral: untuk pengajian tinggi, Kuala Lumpur: Penerbit Universiti Malaya. No. panggilan: BJ1185 .B47 2003
6. Alcorn, P. A. (2001). Practical ethics for a technological world, Cincinnati, OH: Prentice-Hall. No. panggilan: BJ159 .A42 2001 N1

BNB 31603 Fire Protection & Security System

Sinopsis

Fire services are essential elements which need to take into account in any building development. This course introduces students to the fire services procedures and applications according to Uniform Building By Laws, 1984. Scopes of study includes introduction to building fires and fire service systems, fire safety provisions and code requirements, water based system, gas protection systems, fire detector and alarm system, and passive fire protection systems.

References

1. MDC Legal Advisers; Uniform Building By Laws, 1984 (Amendment 2007). 2. CIBSE; Fire Engineering; 2nd Edition, London, UK, 2003.
2. Sturges, J. L., Fire safety and buildings, Blackwell Science, 2003. 4. James Angle et al.; Firefighting strategies and tactics; 2nd ed., Australia: Delmar Cengage Learning, 2008. No. panggilan: TH9145
.F57 2008
3. Robert Burke; Fire protection: systems and response; Boca Raton, FL: CRC Press, 2008. No. panggilan: TH9245 .B87 2008
4. John A. Purkiss; Fire safety engineering: design of structures; 2nd ed., Burlington, MA: Butterworth-Heinemann, 2007. No. panggilan: TH1065 .P87 2007
5. Michael Wieder and Carol Smith; Fire inspection and code enforcement; 6th ed., Stillwater, OK: Fire Protection Publications, 2007. No. panggilan: TH9176 .F57 2007
6. David Diamantes; Fire prevention: inspection and code enforcement; 2nd ed., Albany, NY: Thomson Learning, 2003. No. panggilan: TH9176 .D52 2003

BNB 31803 Building Transportation System

Synopsis

This course introduces students to basic principles of building transportation system in building. The aim is to generate knowledge and understanding of various types of building transportation in building. Scope of study include introduction to building transportation system, lift and elevator, escalators, moving pavement, intelligence transportation system and mobile/other building transportation system.

References:

1. CIBSE Guide H – Building Control Systems, BH 2000. Call Number TH6021.B84 2000
2. David V. Chaddeton, Building Services Engineering 6th Edition. Routledge, 2013
3. Roger Greeno and Fred Hall, Building Services Handbook 7th Edition, Routledge, 2013
4. Gina Barnet & Lutfi Al-Sharif, Elevator Traffic Handbook: Theory and Practice 2nd Edition, Routledge, 2015
5. GVD/15 CIBSE Guide D: Transportation Systems in Buildings, 2015.
6. Factories and Machinery (Electric Passenger and Goods Lift) Regulation, 1970

BNB 31902 Computer Aided Building Services

Synopsis

This aim of this course is to give exposure to the students on types and component of computer application, the use in designing and measuring buildings, the operation system and relevant image processing using appropriate computer software. Scope of study includes Computer Aided Design & Drafting (CAD) for Building Services, CMMS Maintenance Planning Software and Building Information Modelling (BIM).

References:

1. Advances in Building Technology, M. Anson, J.M. Ko, E.S.S. Lam, 2002. Call Number TA153.A39 2002 v.1.
2. Architecture and identity: responses to cultural and technological change / Chris Abel. Call Number NA2500 .A33 2000 N1.
3. Building with straw: design and technology of a sustainable architecture, Gernot Minke, 2006. Call Number TH4818.S77 .M56 2005.
4. An Introduction to Sustainable Development Second edition, Jennifer A. Elliott, 2002. Call Number HC59.72.E5 .E44 2006.
5. Architectural management in practice: a competitive approach / Stephen Emmitt, Nicholson, M. P., 2003. Call Number NA.E45 2010 n.1.

BNB 41503 Intelligent Building (Elective II)

Synopsis

Kursus ini memperkenalkan pelajar kepada teknologi dan proses untuk membangunkan bangunan pintar. Matlamatnya adalah untuk mendedahkan pelajar dengan pengetahuan keseluruhan tentang teknologi pembinaan bangunan pintar. Kursus ini memberi tumpuan kepada pengurusan tenaga di dalam bangunan, sistem keselamatan, sistem kawalan, sistem pengurusan bangunan bersepadu berdasarkan pembangunana komputer dan teknologi untuk menyumbang kepada konsep bangunan pintar.

References:

1. Building services design for energy efficient buildings, Paul Tymkow, Routledge. Call number TH880 .B84 2013.

2. Building services handbook: incorporating current building and construction regulations, 5th edition, Fred Hall, Butterworth-Heinemann. Call number TH151 .H34 2010.
3. D.R.Oudhton; Heating and Air Conditioning of Buildings, 11th Edition; Butterworth Heinemann; Oxford; 2012. Call number TH7222 .O93 2008.
4. J.Hesse; Sensors In Intelligent Buildings, Sensor Application, Volume 2; Wiley-VCH; New York; 2001.
5. CIBSE Guide H, Building Control Systems; Butterworth Heinemann; Oxford; 2008. Call number: TA9 .C52 2008
6. Janis, Richard R., Mechanical and electrical systems in buildings, 5th Edition, Pearson, 2014. Call number TH6010 .J36 2014
7. Clements Croome, Derek, Intelligent buildings: Design, managemant and operation, 2nd Edition, London 2013. Call number TH6012 .I57 2013.

BNB 41203 Building Services Audit & Inspection (Elective II)

Synopsis

This course introduces students to detailed plan checking on building services and facilities installation, layout, installation point, size and numbers required, lighting and ventilation, firefighting equipment, safety control, building transportation system and building automation system based on local act and regulation with other international standard guidelines and related rules of thumb.

References:

1. Randall Mcmullan; Environmental Science in Building, fifth edition; New York: Palgrave, 2002.
2. David V. Chadderton; Building Services Engineering: fifth edition; Taylor & francis, 2007. Call number TH6010 .C42 2007.
3. Peter Gevorkian; Sustainable Energy System Engineering: The complete green building design resources; New York: McGraw Hill, 2007.
4. Eckard Mommertz; Acoustics and sound insulation: principles, planning, examples; Boston, MA: Birkhauser, 2009. Call Number NA2800 .M65 2009
5. Eberhard Hansler & Gerhard Schmidt Hoboken;Acoustic echo and noise control: a practical approach; NJ: John Wiley, 2004. Call Number TK5102.98 .H36 2004
6. Brian John Smith, R J Peters & Stephanie Owen; Acoustics and noise control; 2nd ed., Essex: Addison Wesley, 1996. Call Number NA2800 .S64 1996
7. David Coley; Energy and climate change: Creating a sustainable future; England: John Wiley & Sons, 2008.
8. Kathleen Hess-Kosa; Indoor air quality: sampling methodologies; Boca Raton: Lewis Pub., 2002. Call Number TD890 .H47 2002
9. John D. Spengler, Jonathan M. Samet, John F. McCarthy; Indoor air quality handbook; New York: McGraw-Hill, 2001. Call Number RA770 .I42 2001

Year 4 Sem I

BNP 40105 Bachelor Degree Project II

Synopsis

Bachelor Degree Project is a systematic practical academic project utilising knowledge, skills, engineering technology 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.
3. Books, journals and other information which relates with the research project

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 ed.). Hoboken, NJ: John Wiley. HF5549.5.I6 .A44 2004.
2. Badger, I. (2003). Everyday business writing. Essex: Pearson. PE1115.B327 2003.
3. Corfield, R. (2008). Preparing the perfect job application: Application forms and letters made easy. New Delhi: Kogan Page. HF5383 .C67 2008.
4. Haynes, M. E. (2009). Meeting skills for leaders: Make meetings more productive (4th ed.). Rochester, NY: Axzo Press. HD30.3 .H39 2009.
5. Leigh, J. (2004). Successful CVs and job applications. New York: Oxford University Press. HF5383.L44 2004.
6. Molinsky, S. J, & Bliss, B. (1994). Day by day: English for employment communication (1st ed.). Englewood Cliffs, NJ: Longman. PE1128. M67 1994.
7. Peberdy, D. (2009). Brilliant meetings: What to know, do and say to have fewer, better meetings. Harlow: Prentice Hill. HF5734.5 .P42 2009.
8. Wendleton, K. (2014). Mastering the job interview and winning the game (5th ed.). Boston: Cengage Learning. HF5549.5.I6 .W46 2014.
9. Wrathall, J. (2011). Event management: Theory and practice. North Ryde, N.S.W: McGraw-Hill. GT3405 .W72 201

BNB 41303 Building Services Integrated Project

Synopsis

Civil engineering technology graduates are expected to work in the design of various projects which require technical competency and skills of managerial, organisational, communicative and team working. This course is designed to develop those skills and competency through a group project involving a number of major fields of civil engineering. Scope of study include designing heating, ventilation air conditioning (HVAC) system, electricity & energy supply, water, drainage and plumbing system, building transportation system, fire protection, and security system and building science and sustainability

References:

1. Water-supply engineering, the designing and constructing of water-supply systems, Prescott Folwell, 1917
2. Code of Practice for Design and Installation of Sewerage Systems, MS1228 (1991). Standards & Industrial Research Institute of Malaysia.
3. Guidelines for Developers Volume Two: Certification of Sewerage Works Procedures, 2nd Edition (1996). Department of Sewerage Services, Ministry of Housing and Local Government, Malaysia.
4. Design criteria & Standards for Water Supply Systems, Volume 3 (1994). Water Supplies Branch, Public Works Department Malaysia.
5. Guidelines On Submission Of Water Supply Plan To JBA Johor (1993). Jabatan Bekalan Air Johor.

BNB 41403 Facility Management Technology

Synopsis

This course will prepare the students to become a part of a facility team that is involved in both strategic planning and day-to-day operations, particularly in relation to buildings and premises. It helps the students to focus on the best business practice to improve efficiency, by reducing operating costs while increasing productivity for an organisation.

References:

1. Facility Design and Management Handbook, McGraw Hill, 2004.
2. Brian Atkin, Adrian Brooks; Total Facilities Management, Blackwell Publishing, 2005. No. panggilan: HD1394 .A84 2009
3. Craig Langston, Rima Lauge-Kristensen; Strategic Management of Built Facilities, Butterworth Heinemann, 2002. No. panggilan: HD1394 .L36 2002
4. Cost Effective Facilities Management, Building Economics Bereau Ltd., 2002
5. Facilities engineering and management handbook: Commercial, industrial, and institutional buildings / editor-in-chief, Paul R. Smith, 2001. No. panggilan: TS184 .F33 2001 N1
6. Facilities management: towards best practice / Peter Barrett, David Baldry, 2003. No. panggilan: HD1394 .B37 2003

BNB 40803 Renewable Energy Applications (Electives III)

Synopsis

This subject provides a fundamental knowledge on types of energy sources used to supply energy in buildings. Natural and alternative renewable energy, as a new discipline, builds on this foundation to create a new set of theories and practices for future technologist.

References:

1. Scott Grinnell, Renewable energy and sustainable design, Cengage Learning. Call number: NA2542.3 .G76 2016.

2. George Thomson, Renewable energy: futuristic approaches, Callisto Reference. Call number: TJ808 .R465 2015.
3. William E. Glassley, Geothermal energy: renewable energy and the environment, 2nd Edition, CRC Press. Call number: TJ280.7 .G42 2015.
4. Richard A. Dunlap, Sustainable energy, Cengage Learning. Call number: TJ808 .D87 2015.
5. Ashok Rao, Sustainable energy conversion for electricity and co-products: principles, technologies, and equipment, John Wiley. Call number: TK1005 .R37 2015.
6. Joao Neiva de Figueiredo, Green power: perspectives on sustainable electricity generation, CRC Press. Call number: TK1005 .G73 2014.

BNT 20903 Railway Infrastructure and Facilities (Electives III)

Synopsis

This course is to provide basic knowledge of railway infrastructure and facilities. It relates to detailed information of bridges, tracking of drainage systems, retaining walls, tunnels, railway stations and terminal facilities for a better understanding of infrastructure and railway facilities. Discussions on construction projects as a case study related to modern infrastructure and technology are also included as an added value element of this course.

References:

1. Satish Chandra and M.M. Agarwal, Railway Engineering, 2013, 2nd Edition, Oxford University Press, New Delhi, India.
2. J.S. Mundrey, Railway Track Engineering,2004, 3rd Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, India, TF205.M862000.
3. Ernest, T.S and John, M.W.,Track Geotechnology and Substructure Management, 2003, 1st edition, Thomas Telford Publication, London, TF250.S44.1994.
4. S. Ponnuswamy, Railway Transportation – Engineering, Operation and Management, 2012, Alpha Science International Limited, Oxford, UK.
5. Frank Bruinsma et al., 2008, Railway Development-Impact on Urban Dynamic, Physica- Verlag Heidelberg, HE3005.R342008.

Year 4 Sem II

BNP 40212 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 organisations by the university. Every student will be evaluated by the faculty and industrial supervisor. In this programme, 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 Industri (UHKI).