UNIVERSITI MALAYA

BUKU PANDUAN PROGRAM ASASI SAINS

UNIVERSITI MALAYA

SESI 2022/2023

VISION

UNIVERSITI MALAYA

"

A global university **impacting the world.**

"

MISSION

UNIVERSITI MALAYA

“

Pushing the boundaries of knowledge and nurturing aspiring leaders.

”

CORE VALUES

UNIVERSITI MALAYA

P **Passion**
Embrace,
Inspire,
Resourceful

O **Oneness**
Accord,
Partnership,
Mutual Respect

I **Integrity**
Disciplined,
Responsible,
Trustworthy

S **Sincerity**
Honest,
Willing,
Transparent

E **Empathy**
Concern,
Tolerant,
Receptive

KATA-KATA ALUAN
pengarah

اَلسَلامُ عَلَيْكُم وَرَحْمَةُ اَللهِ وَبَرَكاتُهُ dan Salam Sejahtera.

Bagi pihak seluruh warga Pusat Asasi Sains, Universiti Malaya (PASUM), saya ingin mengucapkan setinggi tahniah kepada semua pelajar kerana terpilih untuk mengikuti Program Asasi Sains di PASUM bagi sesi 2022/2023. Para pelajar adalah Kumpulan Pelajar ke-47 sejak penubuhan PASUM pada tahun 1977.

Untuk makluman semua pelajar, PASUM ditubuhkan sebagai wadah untuk para pelajar memantapkan pengetahuan dalam bidang asas sains di dalam suasana pembelajaran di kampus sebelum melangkah ke Fakulti. Proses pembelajaran para pelajar akan disokong dengan tenaga pensyarah yang berpengalaman & berdedikasi, fasiliti pengajaran dan makmal sains yang lengkap serta sistem sokongan hal ehwal pelajar yang tersusun. Tumpuan kami adalah untuk memastikan PASUM menjadi batu loncatan kepada kejayaan para pelajar di Fakulti nanti.

Saya mewakili seluruh warga Pusat Asasi Sains mengalu-alukan kedatangan para pelajar sebagai sebahagian daripada keluarga besar kami. Saya percaya para pelajar telah bersedia untuk memberi komitmen kepada proses pembelajaran sepanjang tempoh pengajian di PASUM serta akan menjadi kebanggaan kepada semua terutamanya kepada ibu bapa dan keluarga pelajar sendiri. Saya percaya bahawa sifat positif yang dibentuk pada usia remaja akan mempengaruhi kematangan dan jati diri pelajar. Kami di sini akan berusaha sedaya upaya untuk menyokong perkembangan sahsiah diri para pelajar melalui program di bawah unit aktiviti pelajar, unit kebajikan pelajar dan unit alumni agar para pelajar menjadi insan cemerlang untuk agama, bangsa dan negara.

Semoga para pelajar akan sentiasa berusaha bersungguh-sungguh untuk mencapai kejayaan dan kecemerlangan yang berterusan.

Profesor Madya Dr. Farazila Yusof
2022

SEJARAH

pasum

Pusat Asasi Sains Universiti Malaya (PASUM) merupakan sebuah program pengajian prauniversiti atau matrikulasi yang telah ditubuhkan pada tahun 1976 di bawah Peruntukan Seksyen 18 Perlembagaan Universiti Malaya. Perancangan program pengajian akademik di PASUM adalah bertujuan untuk melengkapkan para pelajar bumiputera dengan pengetahuan asas sains dan matematik yang kukuh sebagai persediaan untuk melanjutkan pengajian di peringkat Ijazah Sarjana Muda khususnya di Universiti Malaya serta universiti awam yang lain.

Sesi pengajian 1977/78 merupakan kumpulan pertama pelajar yang telah berjaya meneruskan pengajian ke Fakulti Perubatan, Fakulti Kejuruteraan dan Fakulti Sains. Para alumni ini telah berjaya menerima Ijazah Sarjana Muda dalam konvokesyen Universiti Malaya pada tahun 1983. Manakala konvokesyen pada tahun 1984 pula telah menyaksikan kumpulan pertama Program Asasi Sains yang telah berjaya menerima Ijazah Sarjana Muda dalam bidang perubatan.

Para pelajar Pusat Asasi Sains adalah ditempatkan di kolej-kolej kediaman Universiti Malaya bertujuan untuk memberi pendedahan dan pengalaman suasana kehidupan di kampus universiti.
Pada tahun 1982, Program Rancangan Persediaan Khas (Jepun) telah diperkenalkan, dan selanjutnya diikuti pula dengan dua program baharu mulai sesi pengajian 1988/89, iaitu Program Pra Perakaunan untuk pelajar ke Fakulti Ekonomi dan Pentadbiran, dan Program Pra Inggeris Sebagai Bahasa Kedua bagi persediaan pelajar ke Fakulti Pendidikan. Seterusnya, Program Pra Undang-Undang dan Pra Alam Bina telah diperkenalkan pada sesi pengajian 1997/98.

Pusat Asasi Sains pernah mengadakan program kerjasama dengan sembilan buah institusi swasta pada sesi pengajian 1998/99. Institusi tersebut adalah Kolej MARA Banting, Kolej Chempaka, Kolej UNITI, Kolej Matrikulasi Terengganu, Institut Goon, Institut Maxisegar, IKIP, Inpens dan Yayasan Pelajaran Mara Kuantan.

Pada sesi pengajian 2004/05, sesi pengajaran dan pembelajaran bagi Program Asasi Sains dikendalikan dalam Bahasa Inggeris sepenuhnya. Pusat Asasi Sains telah memberi penekanan dalam kursus Bahasa Inggeris supaya pelajar-pelajar mendapat pendedahan sewajarnya bagi memudahkan proses pembelajaran yang berkesan.

Pada masa kini, Pusat Asasi Sains menawarkan program Asasi Sains Hayat, Asasi Sains Fizikal dan Rancangan Persediaan Khas (Jepun). Dengan pengalaman lebih 46 tahun penubuhan, Pusat Asasi Sains Universiti Malaya telah berjaya melahirkan seramai lebih 40,000 pelajar bumiputera dengan asas sains dan matematik yang mantap untuk persediaan melanjutkan pengajian di peringkat Ijazah Sarjana Muda dan seterusnya berkhidmat dalam pelbagai bidang profesional seperti perubatan, kejuruteraan, sains & teknologi, teknologi maklumat dan lain-lain bidang di seluruh Malaysia dan di persada antarabangsa.

PENTADBIRAN

pusat asasi sains

Pentadbiran Pusat Asasi Sains diketuai oleh seorang Pengarah dan dibantu oleh tiga orang Timbalan Pengarah. Bagi memantapkan pentadbiran akademik di Pusat Asasi Sains, 10 orang Penyelaras kursus dan program telah diwujudkan. Selain itu, terdapat seorang Pengurus (Pentadbiran), seorang Penolong Pendaftar Kanan, seorang Penolong Pendaftar dan seorang Penolong Pegawai Tadbir serta kakitangan pelaksana yang turut membantu dalam pentadbiran dan hal ehwal pelajar Pusat Asasi Sains.

KAKITANGAN PUSAT ASASI SAINS
Pusat Asasi Sains mempunyai 91 orang kakitangan akademik yang terdiri daripada seorang Profesor, 22 orang Pensyarah Kanan, 5 orang Pensyarah, 20 orang Pegawai Perkhidmatan Pendidikan, 8 orang Guru Bahasa Inggeris, 35 orang guru Bahasa dan subjek untuk Program Rancangan Persediaan Khas (Jepun)/RPKJ. Sebahagian besar daripada mereka berkelayakan Ijazah Sarjana dan Ijazah Doktor Falsafah dalam bidang masing-masing.

Selain itu, Pusat Asasi Sains mempunyai 55 orang kakitangan bukan akademik yang membantu mengendalikan dan memberi khidmat sokongan di Pusat Asasi Sains.

Keterangan lanjut mengenai kakitangan Pusat Asasi Sains bagi Sesi 2022/2023 adalah seperti berikut:

PEJABAT PENTADBIRAN

PENGARAH
Profesor Madya Dr Farazila Yusof – Beng CAD/M(Malaya), MEng. Sc (Malaya), PhD (Japan), CEng MIMescel

TIMBALAN PENGARAH (AKADEMIK)
-akan dilantik-

TIMBALAN PENGARAH (HAL EHWAL PELAJAR)
Dr. Nor Azlina Abd Aziz – BSc (UM), MPhil (UM), PhD (UM)

TIMBALAN PENGARAH (PENYELIDIKAN & PENCIPTAAN NILAI & PERUSAHAAN)
-akan dilantik-

PENGURUS (PENTADBIRAN)
Pn Shamsiah Abu Bakar – Postgraduate Dip Library & Information Management (Manchester Metropolitan), Dip Lanjutan Sains Perpustakaan, UiTM

PENOLONG PENDAFTAR KANAN
Puan Hazlinda Othman – B.MassComm (Hons)(UiTM)

PENOLONG PENDAFTAR
Encik Amirul Eqhwan Rahim - BSc (UM)

PENOLONG PEGAWAI TADBIR
Cik Intan Shafura Abdullah – B Corp Admin (UiTM), Dip Public Admin (UiTM)

SETIAUSAHA PEJABAT
Puan Hasiah Mohd. Yusoff

PEMBANTU SETIAUSAHA PEJABAT
Puan Anis Syafiqah Ahmad Sukri
Puan Amirah Nadia Saringat

PENOLONG PEGAWAI SAINS
Encik Mohamad Hairul Azmir Harun
Puan Norsyuhadah Yahya
Cik Noor Fhadzilah Mansur

PENOLONG JURUTERA
Encik Zaid Idris

PENOLONG PEGAWAI TEKNOLOGI MAKLUMAT
Puan Norfaizah Mohd Supi

JURUTEKNIK KOMPUTER
Encik Seemandass a/l Ryepun

PEMBANTU TADBIR (P/O)
Encik Mohammad Zulkafli Kassim
Puan Nor Aziah Abas
Puan Nurulasyikin Abd Majid
Puan Norhaniyah Mohamed Yunos
Puan Nurul Syahirah Abdul Hamid

PEMBANTU TADBIR (KEWANGAN)
Puan Johamira Johan
Encik Mohd Shahrulnizam Mohamed Sufian

PEREKA
Encik Muhammad Khedir bin Ariffin

PEMBANTU OPERASI
Encik Mohd Harmizi Mohamad Ali
Puan Nor Haslinda Hassan
Encik Mohd Jauzi Mohd Shahidin
Encik Muhamad Illzam Ishak
Puan Vilasini Sukumaran

PEMANDU KENDERAAN
Encik Mohd Safwan Jasmi

BAHAGIAN FIZIK

Penyelaras
Dr Zainal Abidin Ali - BSc (UM), MSc (UM), PhD (UM)

Pensyarah Kanan/Pensyarah
Dr. Aisyah Hartini Jahidin –B.Eng (UM), MEngSc (UM), PhD (UiTM)
Dr. Salmiah Ibrahim – BSc (UM), MPhil (UM), PhD (UM)
Dr. Zainal Abidin Ali– BSc (UM), MSc (UM), PhD (UM)
Dr. Mohd Fahmi Azman – B.Eng (UM), MEngSC (UM), PhD (UM)
Dr. Norhiwani Mohd Hapipi – BSc (UPM), MPhil (UTM), PhD (UTM)

Puan Hashlina Rusdi – BSc (UM), MSc (UM)

Pegawai Perkhidmatan Pendidikan
Puan Norhafiza Muda –BSc (UiTM), MSc (UM), PGDE (UM)
Encik Naharudin Mustafa –BSc (UKM), MSc (UM), PGDE (UM)
Encik Hafizul Mat –BSc (UiTM), PGDE (UM)
Encik Mohd Yahya Ahmad –BSc (UiTM), MSc (UiTM), PGDE (UM)
Encik Amirul Hakimi Baderus–BSc (UKM), PGDE (UM)
Cik Nur Shamimi Akmal Azany - BSc Ed (UPM)

Pembantu Makmal
Puan Norhaslina Kamarudin
En. Shahnizam Sakiman
Puan Noor Ilham Aliya Zulkifli
Cik Shamsiah Abd Rahman
Puan Nurfarhana Mohd Azmi
Cik Siti Intan Nor Ain Rahim
Encik Muhammad Izzad Ramli

Pembantu Operasi
Encik Roslan Ahmad

BAHAGIAN BIOLOGI

Penyelaras
Dr. Mahanom Jalil – BSc (UM), MSc (UM), PhD (UM)

Pensyarah Kanan
Dr. Wan Adriyani Wan Ruzali – BSc (UM), PhD (Bristol)
Dr. Mohd Faizzi Mohd Yusof – BSc (UM), MSc (UM), PhD (Ireland)
Dr. Mahassan Mamat – BSc (UM), MSc (UM), PhD (UM)
Dr. Nor Azlina Abd Aziz – BSc (UM), MPhil (UM), PhD (UM)
Dr. Mahanom Jalil – BSc (UM), MSc (UM), PhD (UM)

Pegawai Perkhidmatan Pendidikan
Puan Maslenda Markom –BSc (UM), MSc (UM), PGDE (UM)

Pembantu Makmal
Encik Mohd Hafiszan Mohd Yusuf
Puan Hajartul Niza Abd Ghani
Encik Sadek Sanusi
Encik Muhammad Azrul Razali
Encik Muhammad Shafiq Rohaidi

BAHAGIAN MATEMATIK

Penyelaras
Dr. Siti Fatimah Hassan – BSc (Ed) (UM), MPhil (UM), PhD (UM)

Profesor/Pensyarah Kanan/Pensyarah
Profesor. Dr. Yong Zulina Zubairi – Dip.Pend (UKM), BSc (Kansas), MSc (Kansas), PhD (Bradford)
Dr. Ahmad Syafadhli Abu Bakar – BSc (UiTM), MSc (UiTM), PhD (UK)
Dr. Siti Fatimah Hassan – BSc (Ed) (UM), MPhil (UM), PhD (UM)
Dr. Norsiah Hashim – BSc (UTM), MSc (UTM), PhD (UM)
Dr. Norli Anida Abdullah – BSc (UM), MSc (UM), PhD (UM)
Dr. Norhaslina Kamarulzaman - BSc (UTM), MSc (UM), PhD (UM)

Dr. Nor Artisham Che Ghani - BSc (UIA), MSc (UM), PhD (UM)
Dr. Nor Zatul-Iffa Ismail - BEc (UM), MSc (USM), PhD (UiTM)
Puan Rohayatimah Muhammad Tahir – BSc (North Carolina), MSc (California)

Pegawai Perkhidmatan Pendidikan
Dr. Ahmad Zaki Mohamad Amin – Dip.Sc (UITM), BSc (UiTM), MSc (UTM), PhD (UTM)
Encik Jedzry Fadzlin Jalaluddin –BSc (UM), MSc (UiTM), PGDE (UM)
Encik Amirul Mohamad Khairi Mannan –BSc (UM), MSc (UiTM), PGDE (UM)
Encik Fakhrulrozi Hussain –BSc (Mal), MSc (UM), MPhil (UM), PGDE (UM)
Puan Raiha Shazween Redzuan –BSc (UM), PGDE (UM)
Cik Raihan Zainudin –B.Eng (USyd), PGDE (UM)
Encik Hisham Safuan Mohamad Sukri – BSc Ed (UM)

BAHAGIAN KIMIA

Penyelaras
Dr. Liew Sook Yee – BSc (UMT), PhD (UM)

Pensyarah Kanan/Pensyarah
Dr. Fauzani Md Salleh – BSc (UKM), MSc (UKM), PhD (UM)
Dr. Nurshafiza Shahabudin – BSc (UM), MSc (UM), PhD (UM)
Dr. Liew Sook Yee – BSc (UMT), PhD (UM)
Dr. Siti Nor Farhana Yusuf – BSc (UM), MSc (UM), PhD (UM)
Dr Ahmad Danial Azzahari - BSc (UM), MSc (UM), PhD (UM)
Encik Mohd Hilmi Jaafar – BSc (UM), MSc (UM)
Encik Nasrulzamani Mohd Rodzi – BSc (UM), MSc (UM)

Pegawai Perkhidmatan Pendidikan:
Cik Azlina Puang – BSc (UM), MSc (UM), PGDE (UM)
Puan Mahfuzah Yusoff –BSc (UM), MSc (UM), PGDE (UM)
Puan Zuraini Kadir –BSc (UM), MSc (UM), PGDE (UM)
Encik Che Mohd Farhan Che Mat Dusuki –BSc (UM), MSc (UKM), PGDE (UM)
Puan Wan Nurhidayah A Karim –BSc (UM), MSc (UM), PGDE (UM)
Encik Muhammad Hafiz Husna Hasnan – B.Ed (UPSI), MSc (UPSI)

Pembantu Makmal
Encik Muhammad Syafiq Muhamad Wahid
Encik Mohd Saiful Nizam Nordin
Puan Siti Zawiah Hatibin
Puan Tengku Nur Yuhanie Tengku Ahmad
Puan Nurul Ashikim Mohd
Encik Mohd Fazly Ab Rahim
Encik Mazlan Amit
Cik Nurul Artika Mohd Samsuri

Pembantu Operasi
Puan Rosliza Yosof
Encik Salihen Said
Encik Wan Mohd Arif Wan Mahmood

BAHASA INGGERIS

Penyelaras
Puan Nik Fatin Nik Hashim – B.HSc in ELL (UIA)

Guru Bahasa Inggeris
Puan Nik Fatin Nik Hashim – B.HSc in ELL (UIA)
Puan Rabiatul Adawiyyah Abdullah – B.Edu (Hons) in TESL (UiTM), MLing(UM)
Puan Sakila Govindaraju – B.Edu in TESL (UM), M.ESL (UM)
Puan Shazlin Niza Ab Razak – B.Edu in TESL (UiTM), MLing(UM)
Puan Suhaila Hani Zaidin – B.Art Eng (Madison)
Puan Nurul Nazifah Dato' Haji Mat Noh - B.HSc in ELL (UIA), MA (USM)
Encik Andy Helmy Zainal Abidin – B.English in TESOL (Unirazak)
Puan Zarinah S.A Mohd Abu Bakar Ali – B.A (UM)

JATIDIRI

Penyelaras
Tn. Hj. Zainol Abidin Kasim - BA (Kyorin), MA (UM)

TEKNOLOGI MAKLUMAT

Penyelaras
Cik Raihan Zainudin –B.Eng (USyd), PGDE (UM)

PROGRAM ASASI PENGAJIAN ISLAM DAN SAINS (BAHAGIAN SAINS)

Penyelaras
Dr. Ahmad Syafadhli Abu Bakar – BSc (UiTM), MSc (UiTM), PhD (UK)

RANCANGAN PERSEDIAAN KHAS (JEPUN) / RPKJ

Penyelaras Program
Cik Rosniza Mohamed Noor – BE (Yamagata), MA (Tokyo Foreign Studies)

Ketua Guru-Guru Subjek Jepun
Encik Niijima Kazuki – MSc (Niigata)

Ketua Guru-Guru Bahasa Jepun
Encik Kobayashi Manabu – BA (Tsukuba), MA (Obirin)

Penyelaras Bahasa Jepun Tahun 1
Puan Fazrina Said – BInf (Shizuoka), MSc (UiTM)

Pensyarah Bahasa Jepun (Tahun 1)
Encik Zainol Abidin Kasim – BA (Kyorin), MA (UM)

Guru Bahasa Jepun (Tahun 1)
Puan Fazrina Said – BInf (Shizuoka), MSc (UiTM)
Encik Kobayashi Manabu – BA (Tsukuba), MA (Obirin)
Cik Khairul Bariah Abd Latif Azmi – BE (Akita), MA (UM)
Encik Mohd Norhaswira Hasan – BE (Nagoya)
Cik Miyairi Eiko – BA (Dokkyo), MA (Musashino)
Encik Kishi Takanobu – BA (Kyoto Sangyo), M School Edu (Hyogo)
Encik Kuchikata Shuichi – BA, MEd (Tokyo Gakugei)
Encik Takei Yasujiro – LL.B (Nihon), MA (Japanese Language) (Oberlin)

Penyelaras Bahasa Jepun Tahun 2
Encik Muhammad Nazrul Nana Khurizan – BE (Miyazaki), MA (Tokyo Foreign Studies)

Pensyarah Bahasa Jepun (Tahun 2)
Encik Zainol Abidin Kasim – BA (Kyorin), MA (UM)

Guru Bahasa Jepun (Tahun 2)
Cik Takao Mariko – Postgraduate Diploma (London), MSc Language Teaching (Edinburgh)
Encik Muhammad Nazrul Nana Khurizan – BE (Miyazaki), MA (Tokyo Foreign Studies)
Cik Rosniza Mohamed Noor – BE (Yamagata), MA (Tokyo Foreign Studies)
Puan Maisarah Kamal – BE (Fukui), MA (Kanazawa)
Encik Tatsumi Yusaku – BA (Meiji Gakuin), MA(Keio)

Guru Subjek Jepun (Kimia)
Encik Atsuta Yukihiro – BSc (Rikkyo)
Encik Saio Yasunori – BSc (Okayama)
Encik Okada Izuru – BEd (Kobe)
Encik Shiozawa Kazunari – MSc (Nagoya)
Encik Kawamura Shoei – MEd (Hokkaido)

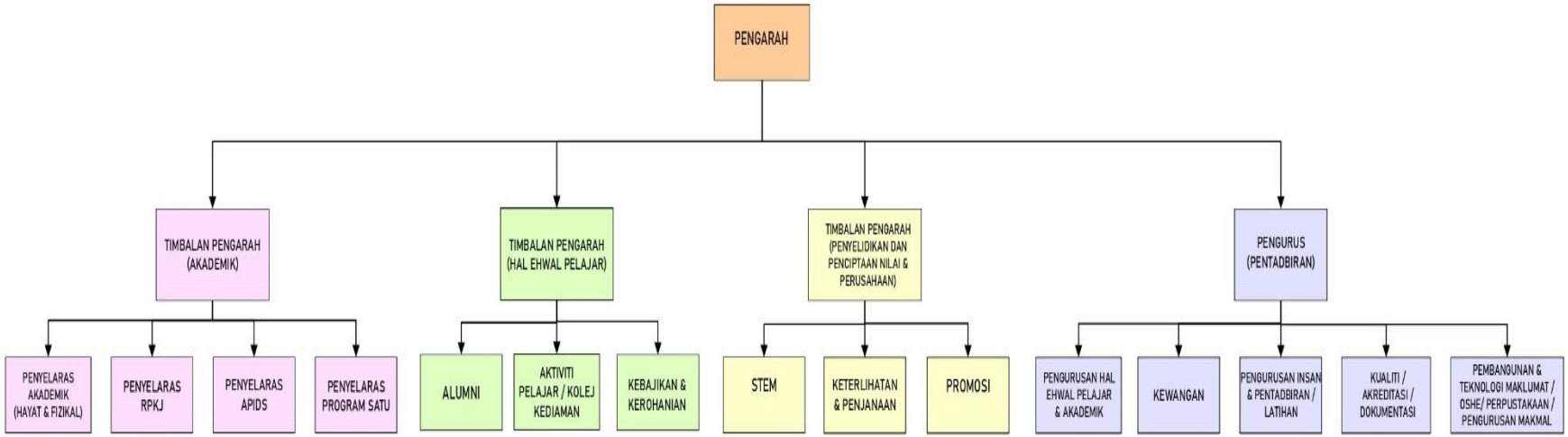
Guru Subjek Jepun (Fizik)
Encik Saito Tatsuya – BSc (Tohoku), MA (Tsukuba)
Encik Matsui Hiroshi – BSc (Nagoya)
Encik Yoshida Takeo – BSc (Hirosaki)
Encik Takayasu Tsuyoshi – BSc (Ryukyu)
Encik Furukawa Kousuke – MSc (Kumamoto)

Guru Subjek Jepun (Matematik)
Cik Okita Michiyo – BSc (Yamaguchi)
Encik Aoki Yuki – BSc, MSc (Osaka Prefecture)
Encik Koyama Shigeki – BSc (Tokyo Metropolitan)
Encik Saito Hajime – BEd (Akita)
Encik Ishiwari Kazuhiko – BSc (Shizuoka)
Encik Shida Shigemichi – BSc (Tokyo Science)
Encik Furukawa Eiji – BSc (Kumamoto), MEd (Saga)
Encik Niijima Kazuki – MSc (Niigata)

UNIVERSITI MALAYA

CARTA ORGANISASI PENGURUSAN

pusat asasi sains universiti malaya



KALENDAR PENGAJIAN SESI AKADEMIK 2022/2023
(PROGRAM ASASI SAINS DAN PROGRAM ASASI PENGAJIAN ISLAM & SAINS)

SEMESTER I				
Haluansiswa		06.08.2022	-	10.08.2022
Kuliah	8 minggu	11.08.2022	-	02.10.2022
Cuti Pertengahan Semester I	1 minggu*	03.10.2022	-	09.10.2022
Pentaksiran Pertengahan Semester I	1 minggu	10.10.2022	-	16.10.2022
Kuiah	9 minggu*	17.10.2022	-	18.12.2022
Minggu Ulangkaji	1 minggu*	19.12.2022	-	25.12.2022
Peperiksaan Akhir Semeter I	2 minggu*	26.12.2022	-	08.01.2023
	22 minggu			
SEMESTER II				
Kuliah	8 minggu*	16.01.2023	-	12.03.2023
Cuti Pertengahan Semester II	1 minggu	13.03.2023	-	19.03.2023
Pentaksiran Pertengahan Semester II	1 minggu*	20.03.2023	-	26.03.2023
Kuliah	9 minggu*	27.03.2023	-	28.05.2023
Minggu Ulangkaji	1 minggu	29.05.2023	-	04.06.2023
Peperiksaan Akhir Semester II	2 minggu*	05.06.2023	-	16.06.2023
	22 minggu			

(*) Kalendar Akademik telah mengambil kira cuti umum dan cuti perayaan. Maklumat cuti adalah tertakluk kepada perubahan.

Maulidur Rasul (9 Oktober 2022)
Deepavali (24 Oktober 2022)
Hari Krismas (25 Disember 2022)
Cuti Tahun Baharu (1 Januari 2023)
Tahun Baharu Cina (22 & 23 Januari 2023)
Hari Wilayah (1 Februari 2023)
Hari Thaipusam (4 Februari 2023)
Nuzul Al-Quran (8 April 2023)
Hari Raya Aidilfitri (22 & 23 April 2023)
Hari Pekerja (1 Mei 2023)
Hari Wesak (4 Mei 2023)
Hari Keputeraan Agong (5 Jun 2023)
Hari Raya Aidiladha (29 Jun 2023)
Awal Muharam (19 Julai 2023)
Hari Kebangsaan (31 Ogos 2023)
Hari Malaysia (16 September 2023)

MUET Speaking – 11, 12, 13, 17, 18 dan 19 Oktober 2022
MUET Writing – 5 November 2022

Dikemaskini pada: 16.6.2022

YURAN PENGAJIAN
PROGRAM ASASI SAINS
sesi akademik 2022/2023

BUTIR	ASASI SAINS HAYAT		ASASI SAINS FIZIKAL	
	SEMESTER I (RM)	**SEMESTER II (RM)**	**SEMESTER I (RM)**	**SEMESTER II (RM)**
Yuran Pengajian Yuran Asrama Yuran Perkhidmatan	350.00 600.00 1,000.00	350.00 600.00 -	350.00 600.00 1,000.00	350.00 600.00 -
JUMLAH	**1,950.00**	**950.00**	**1,950.00**	**950.00**
JUMLAH MENGIKUT SEMESTER	**1,950.00**	**950.00**	**1,950.00**	**950.00**
JUMLAH	**2,900.00**		**2,900.00**	

Kadar yuran yang dinyatakan adalah tertakluk kepada perubahan. Bantuan kewangan oleh KPM akan diberikan kepada pelajar Asasi yang layak. Proses permohonan bantuan kewangan ini akan dimaklumkan kemudian.

Yuran Peperiksaan *Malaysian University English Test* (MUET) adalah termasuk dalam yuran di atas. Pihak PASUM akan menguruskan pendaftaran dan peperiksaan pelajar yang berdaftar.

MAKLUMAT PENTADBIRAN

1. PROSEDUR MENARIK DIRI DARIPADA PROGRAM ASASI

Pelajar adalah diminta untuk memohon penarikan diri menerusi sistem MAYA (Sila rujuk tatacara lengkap di Lampiran A).

2. PINDAAN MAKLUMAT PERIBADI

Pelajar adalah dinasihatkan untuk memaklumkan sebarang pertukaran alamat kediaman atau lain-lain maklumat peribadi dengan mengisi Borang Pindaan Maklumat Peribadi (UM.F/116/2006) yang boleh didapati di Pejabat Am, Pusat Asasi Sains dengan segera untuk pengemaskinian maklumat pelajar. (Sila rujuk borang seperti di Lampiran B)

3. KETIDAKHADIRAN SEMASA SEMESTER

Seseorang pelajar yang tidak boleh menghadiri kuliah/tutorial/amali pada minggu pengajian hendaklah memohon kebenaran daripada Pengarah Pusat Asasi Sains dengan menggunakan Borang Permohonan Cuti/Pengecualian daripada Kuliah/Tutorial/Amali (UMF110/2005) dengan melampirkan surat/dokumen sokongan. (Sila rujuk borang seperti di Lampiran C).

Pelajar hanya akan diberikan pengecualian daripada menghadiri Kuliah/Tutorial/Amali pada tarikh atau masa tersebut hanya setelah mendapat kebenaran daripada Pengarah sahaja.

Sekiranya pelajar tidak dapat menghadiri Kuliah/Tutorial/Amali atas sebab kesihatan, sijil cuti sakit perlu dikemukakan kepada Pejabat Am, Pusat Asasi Sains Universiti Malaya dalam tempoh **7 hari** untuk direkodkan.

4. KETIDAKHADIRAN SEMASA PEPERIKSAAN / UJIAN

Pelajar perlulah mengemukakan sijil cuti sakit dan laporan doktor tentang jenis penyakit dan keadaan kesihatan pelajar yang dikeluarkan oleh Pengamal Perubatan Berdaftar, Klinik Kesihatan Pelajar Universiti/Hospital Kerajaan/Pusat Perubatan Universiti Malaya atau Pusat Perubatan Swasta. Sijil cuti sakit dan laporan doktor yang dikeluarkan oleh mana-mana klinik swasta **TIDAK AKAN** dipertimbangkan.

5. KAEDAH DAN PERATURAN UNIVERSITI MALAYA (PENGAJIAN ASASI) 2020

Semua pelajar adalah tertakluk kepada Kaedah-kaedah Universiti Malaya (Pengajian Asasi) 2020 dan Peraturan-Peraturan Universiti Malaya (Pengajian Asasi) 2020.

MAKLUMAT PENTADBIRAN PENGAJIAN

PROGRAM ASASI SAINS HAYAT/FIZIKAL

Objektif Pendidikan Program
Programme Educational Objectives (PEO)

PE01 Menggunakan pengetahuan asas pada peringkat pengajian asasi untuk melanjutkan pelajaran ke peringkat pengajian tinggi dalam bidang Matematik, Sains dan Kejuruteraan

Use basic knowledge at foundation level of studies to pursue tertiary education in various fields of Mathematics, Science and Engineering.

PE02 Menunjukkan kemahiran teknikal dalam bidang pengajian mereka serta proses pemikiran kritis, kreatif dan penyelesaian masalah

Demonstrate technical skills in their field of study and the processes of critical thinking, creative thinking and problem solving.

PE03 Memiliki sikap positif terhadap pembelajaran seumur hidup

Possess positive attitudes for lifelong learning.

MATLAMAT PROGRAM

Program ini ditawarkan bertujuan untuk menyediakan pelajar lepasan SPM dengan pengetahuan dan kemahiran dalam bidang Sains, Teknologi, Kejuruteraan dan Matematik (STEM) secara holistik bagi memastikan mereka berjaya mengikuti pengajian pada peringkat Sarjana Muda di fakulti-fakulti berkaitan di Universiti Malaya khususnya, atau di institusi pengajian tinggi lain umumnya.

HASIL PEMBELAJARAN PROGRAM

Pada akhir program pengajian, pelajar dapat:

1. Mengguna pakai fakta, konsep, prinsip dan proses asas sains dalam membuat keputusan.

2. Mengaplikasikan prinsip asas sains bagi mengenal pasti dan menyelesaikan masalah.

3. Terlibat dalam pembelajaran secara berterusan dan aktiviti amali dalam bidang asas sains yang berkaitan.

4. Berkomunikasi mengenai konsep asas sains dengan berkesan, tepat dan koheren secara lisan dan tulisan.

5. Mengaplikasi teknologi digital dalam mencari dan memproses data dan maklumat asas sains yang berkaitan.

6. Mencari, mentafsir dan menggunakan maklumat asas sains berkaitan untuk kemahiran kendiri bagi pembelajaran sepanjang hayat.

PROGRAM ASASI SAINS

SENARAI KURSUS MENGIKUT SEMESTER

PROGRAM ASASI SAINS HAYAT

KOMPONEN	SEMESTER 1		SEMESTER 2		JUMLAH KREDIT
	MATA PELAJARAN	KREDIT	MATA PELAJARAN	KREDIT	
KURSUS UNIVERSITI	FAX1001 – Jati Diri	1	FAX1001 – Jati Diri	1	55
	FAX1002 – Teknologi Maklumat	1	FAX1006 – Asas Kemahiran Berkomunikasi	2	
	FAX1005 –Bahasa Inggeris Untuk Pengajian Asasi	4			
KURSUS TERAS PROGRAM	FAD1001 – Biologi 1	3	FAD1003 – Biologi 3	3	
	FAD1002 – Biologi 2	3	FAD1004 – Biologi 4	3	
	FAD1016 – Kimia Asas 1	4	FAD1018 – Kimia Asas 2	4	
	FAD1017 – Kimia Amali 1	2	FAD1019 – Kimia Amali 2	2	
	FAD1020 – Fizik Asas 1	4	FAD1022 – Fizik Asas 2	4	
	FAD1021 – Fizik Amali 1	2	FAD1023 – Fizik Amali 2	2	
	FAD1013 – Matematik I	4	FAD1014 – Matematik II	3	
			FAD1015 – Matematik III	3	
Jumlah Kredit (JK)		28		27	

Jumlah Kredit Keseluruhan 55 Kredit

PROGRAM ASASI SAINS FIZIKAL

KOMPONEN	SEMESTER 1		SEMESTER 2		JUMLAH KREDIT
	MATA PELAJARAN	KREDIT	MATA PELAJARAN	KREDIT	
KURSUS UNIVERSITI	FAX1002 – Teknologi Maklumat	1	FAX1001 – Jati Diri	1	55
	FAX1001 – Jati Diri	1	FAX1006 – Asas Kemahiran Berkomunikasi	2	
	FAX1005 –Bahasa Inggeris Untuk Pengajian Asasi	4			
KURSUS TERAS PROGRAM	FAC1001 – Matematik Lanjutan I	3	FAC1003 – Pengaturcaraan II	3	
	FAC1002 – Pengaturcaraan I	3	FAC1004 – Matematik Lanjutan II	3	
	FAD1016 – Kimia Asas 1	4	FAD1018 – Kimia Asas 2	4	
	FAD1017 – Kimia Amali 1	2	FAD1019 – Kimia Amali 2	2	
	FAD1020 – Fizik Asas 1	4	FAD1022 – Fizik Asas 2	4	
	FAD1021 – Fizik Amali 1	2	FAD1023 – Fizik Amali 2	2	
	FAD1013 – Matematik I	4	FAD1014 – Matematik II	3	
			FAD1015 – Matematik III	3	
Jumlah Kredit (JK)		28		27	

Jumlah Kredit Keseluruhan 55 Kredit

RINGKASAN KURSUS

COURSE SYNOPSIS

Biology

FAD1001

Biology 1

FAD1002

Biology 2

FAD1003

Biology 3

FAD1004

Biology 4

FAD1001: BIOLOGY 1 *(3 credit hours)*

This course consists of the following topics:

1. ***Chemistry of Life****: Inorganic compounds: water, acids, bases and mineral salts. Organic compounds: carbohydrates, lipids, phospholipids, protein, nucleic acids and vitamins.*
2. ***Cell Structure and Function****: Prokaryotes and eukaryotes, technique for the study of cell, structure, function and distribution of organelles in animal and plant cell, cell membrane (Davson-Danielli and Fluid Mosaic Model by Singer) and transport across membrane.*
3. ***Enzymes, Cellular Respiration and Photosynthesis****: Mechanism of enzyme action, factors affecting enzyme activity. Enzyme cofactors, inhibitors. Application of enzyme concept. Aerobic and anaerobic respiration. Photosynthesis – organelle and chemical processes.*
4. ***Cell Cycle and Cell Division****: Cell cycle, mitosis and meiosis, comparison between mitosis and meiosis, nondisjunction of chromosome (aneuploidy and euploidy).*

At the end of the course, the students are able to:

1. *Understand the basic concepts and principles of biology.*
2. *Apply the concepts and principles in biology to solve biological problems.*
3. *Conduct biological experiments in biology related topics using appropriate scientific methods.*
4. *Ability to understand the guidelines and ethics in handling samples and biology equipment*

Main Reference Books:

1. *Campbell Biology, 12th Edition (2020). Lisa A. Urry,Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Rebecca Orr. Pearson.*
2. *Biology 11th Edition (2019). Eldra P. Solomon, Charles E. Martin, Diana W. Martin, Linda R. Berg. CENGAGE.*
3. *Biology for Matriculation Semester 1 Fifth Edition Updated (2018). Liew Shee Leong, Sudani Sudin, Kamaludin A. Rashid, Lee Soon Ching, Nor Azlina Abd Aziz. Oxford Fajar.*
4. *Biology for Matriculation Semester 2 Fifth Edition Updated (2019). Lee Soon Ching, Sudani Sudin, Nalini B., Jacqueline R.S. Oxford Fajar.*
5. *Comprehensive College Biology (2019). Mahanom Jalil, Maslenda Markom, Nor Azlina Abd Aziz, Noor Hashida Hashim, Haliza Hamzah, Nazira Zubir. SAP Publication.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

FAD1002: BIOLOGY 2 *(3 credit hours)*

This course consists of the following topics:

1. ***Genetic inheritance****: Mendelian genetics – monohybrid and dihybrid inheritance. Mendel's Laws. Deviation from Mendelian genetics. Gene, alleles and chromosomes. Gene linkage.*
2. ***DNA and Protein Synthesis****: DNA as genetic material, structure and function of DNA and RNA. Replication, transcription and protein synthesis (translation).*
3. ***Mutation and Human Genetics****: Types of mutation, mutation agent. Autosomal recessive, dominant and sex-linked inheritance. Syndrome due to mutation. Pedigree analysis. Genetic counseling and screening.*
4. ***Genetic Engineering****: DNA recombinant technology, endonuclease enzyme, DNA ligase, cloning vector. Genome and gene library. Application in medicine and agriculture.*

At the end of the course, the students are able to:

1. *Explain the basic concepts and principles of biology.*
2. *Apply the basic concepts and principles in biology to solve biological problems.*
3. *Demonstrate skill to relate scientific information gathered in solving problems related to biological concepts and principles.*
4. *Ability to practice positive attitude and integrity towards research.*

Main Reference Books:

1. *Campbell Biology, 12th Edition (2020). Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Rebecca Orr. Pearson.*
2. *Biology 11th Edition (2019). Eldra P. Solomon, Charles E. Martin, Diana W. Martin, Linda R. Berg. CENGAGE*
3. *Biology for Matriculation Semester 1 Fifth Edition Updated (2018). Liew Shee Leong, Sudani Sudin, Kamaludin A. Rashid, Lee Soon Ching, Nor Azlina Abd Aziz. Oxford Fajar.*
4. *Biology for Matriculation Semester 2 Fifth Edition Updated (2019). Lee Soon Ching, Sudani Sudin, Nalini B., Jacqueline R.S. Oxford Fajar.*
5. *Comprehensive College Biology (2019). Mahanom Jalil, Maslenda Markom, Nor Azlina Abd Aziz, Noor Hashida Hashim, Haliza Hamzah, Nazira Zubir. SAP Publication.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

FAD1003: BIOLOGY 3 *(3 credit hours)*

This course consists of the following topics:

1. ***Population genetics****:-Population genetics – gene pool and Hardy-Weinberg Laws.*
2. ***Plant diversity****: Taxonomy, virus and bacteria, gymnosperm, angiosperm. Plant reproduction and growth. Fungi, alga, bryophyte, pteridophyte.*
3. ***Animal diversity****: Classification, characteristics of protozoa, coelenterata, nematoda, annelida, platyhelminthes, athropoda, mollusca, echinodermata and chordata.*
4. ***Histology****: Cell specialisation, classification, structure and function of plant and animal tissues.*
5. ***Autotrophic and Heterotrophic Nutrition****: Autotrophic and heterotrophic nutrition, autotrophic and chemosynthetic bacteria.*

At the end of the course, the students are able to:

1. *Explain the basic concepts and principles of biology.*
2. *Apply the basic concepts and principles in biology to solve biological problems.*
3. *Demonstrate skill to relate scientific information gathered in solving problems related to biological concepts and principles.*
4. *Ability to practice positive attitude and integrity towards research*

Main Reference Books:

1. *Campbell Biology, 12th Edition (2020). Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Rebecca Orr. Pearson.*
2. *Biology 11th Edition (2019). Eldra P. Solomon, Charles E. Martin, Diana W. Martin, Linda R. Berg. CENGAGE*

3. *Biology for Matriculation Semester 1 Fifth Edition Updated (2018). Liew Shee Leong, Sudani Sudin, Kamaludin A. Rashid, Lee Soon Ching, Nor Azlina Abd Aziz. Oxford Fajar.*
4. *Biology for Matriculation Semester 2 Fifth Edition Updated (2019). Lee Soon Ching, Sudani Sudin, Nalini B., Jacqueline R.S. Oxford Fajar.*
5. *Comprehensive College Biology (2019). Mahanom Jalil, Maslenda Markom, Nor Azlina Abd Aziz, Noor Hashida Hashim, Haliza Hamzah, Nazira Zubir. SAP Publication.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

FAD1004: BIOLOGY 4 *(3 credit hours)*

This course consists of the following topics:

1. ***Animal Respiration and Circulation System**: Respiration surface, adaptation and organ. Human respiration mechanism. Human circulation system. Lymphatic system.*
2. ***Homeostasis and Resistance to Diseases:** Control of body sugar level and temperature. Excretion and osmoregulation. Resistant mechanism, human blood group, antibody and antigen.*
3. ***Response and Communication**: Nervous system organisation. Effector (skeletal muscle). Stimulation receptors. Endocrine system – hormones.*
4. ***Animal Reproduction and Development**: Structure and function of human reproductive system, hormone regulation, gametogenesis, fertilisation, embryonic development, pregnancy, delivery and lactation.*
5. ***Ecology**: Basic principles of ecology, energy flow, food web, interaction between organisms, biogeochemical cycles, succession and pollution.*

At the end of the course, the students are able to:

1. *Understand the basic concepts and principles of biology.*
2. *Apply the concepts and principles in biology to solve biological problems.*
3. *Conduct biological experiments in biology related topics using appropriate scientific methods.*
4. *Ability to understand the guidelines and ethics in handling samples and biology equipment*

Main Reference Books:

1. *Campbell Biology, 12th Edition (2020). Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Rebecca Orr. Pearson.*
2. *Biology 11th Edition (2019). Eldra P. Solomon, Charles E. Martin, Diana W. Martin, Linda R. Berg. CENGAGE*
3. *Biology for Matriculation Semester 1 Fifth Edition Updated (2018). Liew Shee Leong, Sudani Sudin, Kamaludin A. Rashid, Lee Soon Ching, Nor Azlina Abd Aziz. Oxford Fajar.*
4. *Biology for Matriculation Semester 2 Fifth Edition Updated (2019). Lee Soon Ching, Sudani Sudin, Nalini B., Jacqueline R.S. Oxford Fajar.*
5. *Comprehensive College Biology (2019). Mahanom Jalil, Maslenda Markom, Nor Azlina Abd Aziz, Noor Hashida Hashim, Haliza Hamzah, Nazira Zubir. SAP Publication.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

chemistry

FAD1016

Basic Chemistry 1

FAD1017

Practical Chemistry 1

FAD1018

Basic Chemistry 2

FAD1019

Practical Chemistry 2

FAD1016 : BASIC CHEMISTRY 1 *(3 credit hours)*

This course consists of the following topics:

1. ***General Chemistry:*** *Matter, phases of matter, behavior and phase change processes, proton, electron and neutron, isotope and isotopic abundance, mass spectrometer, mass spectrum, average atomic mass, IUPAC nomenclature of ions and salts, mole, Avogadro constant, molar volume, concentration of a solution, mole fraction, oxidation number, chemical equation including redox equations, empirical and molecular formulae, stoichiometry*
2. ***Atomic Structure:*** *Bohr's atomic model, line spectrum of hydrogen atom, Rydberg equation, de Broglie's postulate, Heisenberg's uncertainty principle, four quantum numbers, shapes of s, p and d orbitals, electron configuration of an atom, Aufbau Principle, Pauli exclusion principle, Hund's rule & diagonal rule, orbital box diagram, anomalous electron configuration of chromium & copper.*
3. ***State of Matters:*** *Boyle's law, Charle's law & ideal gas equation, Dalton's law of Partial Pressure, kinetic molecular theory of gases, Maxwell-Boltzman distribution, ideal and non-ideal behaviours of gases, van der Waals equation, effusion and diffusion of gases, Graham's Law, rate of effusion, vapour pressure and boiling point.*
4. ***Periodic Table:*** *Arrangement of elements, electronic configuration, locations of representative/main-group elements, transition and inner-transition elements, group and period of elements, chemical groups, metallic and non-metallic behaviour of an element, atomic and ionic radius, ionization energy, electron affinity, electronegativity, melting point & boiling point in terms of structure and bonding, melting and boiling points across period 2 and 3, group 1 and 17, oxides of Period 3 elements.*
5. ***Chemical Bonding:*** *Types of stability for the atoms and ions, Lewis symbols, octet rule, Lewis diagrams, formal charges, ionic bonding, covalent bonding, exceptions from Octet Rule, co-ordinate (dative covalent) bonding, resonance structures, VSEPR theory, orbital overlap, hybridization, bond polarity and dipole moments, intermolecular forces, hydrogen bonding.*
6. ***Introduction to organic compound:*** *Saturated and unsaturated organic compounds, molecular formula, structural formula, functional group, homologous series, classification, naming (IUPAC rule), structural/constitutional isomerism, stereoisomerism, chiral centre, homolytic and heterolytic cleavage of covalent bonds, primary, secondary and tertiary free radical, carbocation, carbanion and inductive effect, electrophile, nucleophile, organic reactions.*
7. ***Introduction to hydrocarbon:*** *Alkanes - general formula, naming (IUPAC rules), physical properties, natural sources, combustion in excess and limited oxygen, unreactivity, halogenation reaction, free radical substitution. Alkenes - general formula, functional group, naming, physical properties, preparation, mechanisms of dehydration of alcohols and dehydrohalogenation of haloalkanes, Saytzeff's rule, addition reaction, Markonikov's rule, anti-Markonikov's rule, unsaturation tests, oxidation reaction.*
8. ***Introduction to Aromatic Compounds:*** *Kekule structure and resonance structure, structures and nomenclature of benzene and its derivatives, electrophilic aromatic substitution reaction of benzene, ortho-para and meta directing substituents, reactions of benzene derivatives, usage of aromatic compounds including the carcinogenic effects.*

At the end of the course, students are able to:

1. *describe the basic concepts of chemistry in the subject of atomic structure, general chemistry, state of matters, periodic table, chemical bonding, introduction of organic compound, hydrocarbon and aromatic compound.*
2. *apply the basic principles of chemistry in the subject of atomic structure, general chemistry, state of matters, periodic table, chemical bonding, introduction of organic compound, hydrocarbon and aromatic compound.*
3. *demonstrate the basic principles of chemistry in the subject of atomic structure, general chemistry, state of matters, periodic table, chemical bonding, introduction of organic* compound, hydrocarbon and aromatic compound.

Main Reference Books:

1. *Pre-University Chemistry (2021), Norbani et al. SAP Publication.*
2. *Principles of Chemistry, A molecular Approach, 2nd Edition (2013), Nivaldo J. Tro, Pearson.*
3. *General Chemistry: The Essential Concepts 5th Edition, International Edition (2008), Raymond Chang, Mc Graw Hill Higher Education.*
4. *General Chemistry, Principles and Structure, 5th Edition (1990), James E. Brady, Wiley.*

Assessment Methods: *Continuous Assessment 50 %, Final Examination 50%*

Medium of Instruction: *English*

FAD1017: PRACTICAL CHEMISTRY 1 *(3 credit hours)*

The topics of laboratory experiments are: introduction to experimental laboratory and usage of laboratory equipment, general chemistry, state of matters, periodic table, chemical bonding and hydrocarbon.

At the end of the course, students must be able to:

1. *perform practical work according to the correct method*
2. *analyse basic chemistry principles of general chemistry, periodic table, state of matters, chemical bonding and hydrocarbon*
3. *demonstrate practical work individually or in groups*

Main Reference Books:

1. *Pre-University Chemistry (2021), Norbani et al. SAP Publication.*
2. *Organic Chemistry, 8th Edition (2013), L.G. Wade, Jr., Pearson.*
3. *Organic Chemistry for Matriculation, 2nd Edition (2009), Siti Asiah Ahmad Junan, Oriental Academic Publication.*
4. *General Chemistry: The Essential Concepts 5th Edition, International Edition (2008), Raymond Chang, Mc Graw Hill Higher Education.*

Assessment Methods: *Continuous Assessment: 100 %*

Medium of Instruction: *English*

FAD1018: BASIC CHEMISTRY 2 *(3 credit hours)*

This course consists of the following topics:

1. ***Chemical Equilibrium:*** *Reversible reaction, dynamic equilibrium/chemical equilibrium, concepts/characteristics of dynamic equilibrium/chemical equilibrium, equilibrium law,*

equilibrium constant (K_c & K_p), homogeneous and heterogeneous reactions, degree of dissociation, relationship between K_c and K_p, reaction quotient expression, Le Chatelier's principle, factors affecting position and equilibrium constant, addition of inert gas and catalyst on chemical equilibrium, importance of chemical equilibrium in the chemical industry.

2. ***Ionic Equilibrium:*** *Arrhenius, Lewis and Bronsted-Lowry, conjugate acid and base, strong acid and base, weak acid and base, pH and pOH, ionic product of water, dissociation constant, degree of dissociation, salt hydrolysis, classification of salts, buffer solution, Henderson-Hasselbach equation, titration, end-point, equivalence point, indicators.*
3. ***Solubility Product:*** *Saturated solution, soluble and insoluble compounds, solubility equilibrium equation, solubility and molar solubility, solubility product, solubility product expression (K_{sp}), solubility product constant, solubility quotient expression, separation of ions by fractional precipitation, common ion effect, Le Chatelier's principle*
4. ***Phase Equilibrium:*** *Phase and component, colligative properties, triple point and critical point, phase diagrams of H_2O and CO_2, ideal and non-ideal solutions for two components system, Raoult's law, azeotrope, ideal and deviations from Raoult's law, fractional distillation*
5. ***Thermochemistry****: Endothermic and exothermic reactions, standard conditions and standard enthalpy of reaction, enthalpy of formation, combustion, atomisation, sublimation, neutralisation, hydration, and solution, Hess' law, enthalpy changes, lattice energy, hydration process of ionic solids, Born-Haber cycle.*
6. ***Electrochemistry:*** *Oxidation and reduction reaction, Galvanic Cell, half-cell and overall reaction equation, cell notation, standard electrode and standard cell potential, standard hydrogen electrode, oxidising agents, reducing agents, spontaneity of a redox reaction, Nernst equation, electrolytic cell, electrolysis, Faraday's first law of electrolysis.*
7. ***Kinetic Chemistry:*** *Reaction rate, differential rate equation, rate law, order of reaction and half-life**,** integrated rate equation, order of reaction, differential & integrated rate equations, effective collision, activation energy, characteristics of an activated complex, factors affecting reaction rate, Arrhenius equation.*
8. ***Stereochemistry:*** *3D image and Fischer projection, optically-active compound, levorotatory or dextrorotatory, racemic mixture, stereoisomers with more than one stereogenic centre.*
9. ***Alcohols & Phenols:*** *Alcohol- Structural and optical isomerism, physical properties, classification, preparation, chemical properties and uses of alcohols. Relative acidity of water, phenol and alcohol. Phenol – preparation, chemical properties and use of phenol.*
10. ***Carbonyl Compounds (Aldehyde & Ketone)-*** *General formula, IUPAC nomenclature, preparation and chemical properties, natural compounds with -C=O group, characteristics of glucose as a reducing sugar, D and L stereoisomers of sugars*
11. ***Carboxylic Acid & its Derivatives:*** *Physical properties, preparation, chemical properties of carboxylic acid & its derivatives*
12. ***Amine & Amino Acids:*** *Amine- Classification, IUPAC nomenclatures, physical properties, preparation (Hoffmann's degradation) and chemical properties of amines. Amino acids- general structure, 20 standard amino acids, naming (IUPAC rule), zwitterion, isoelectric point, reactions of amino acids, peptide, structure of protein and importance of amino acids and protein.*
13. ***Polymer:*** *Terminologies, condensation, addition polymerization, classification and usage of polymer.*

At the end of the course, students are able to:

1. *describe the basic concepts of chemistry in the subject of chemical equilibrium, ionic equilibrium, solubility product, phase equilibrium, thermochemistry, electrochemistry, kinetic chemistry, stereochemistry, alcohol & phenol, ketone & aldehyde, carboxylic acid and its derivatives, amine & amino acid and polymer.*
2. *apply the basic principles of chemistry in the subject of chemical equilibrium, ionic equilibrium, solubility product, phase equilibrium, thermochemistry, electrochemistry, kinetic chemistry,*

stereochemistry, alcohol & phenol, ketone & aldehyde, carboxylic acid and its derivatives, amine & amino acid and polymer.
in solving chemistry problem.

3. *demonstrate the basic principles of chemistry in the subject of chemical equilibrium, ionic equilibrium, solubility product, phase equilibrium, thermochemistry, electrochemistry, kinetic chemistry, stereochemistry, alcohol & phenol, ketone & aldehyde, carboxylic acid and its derivatives, amine & amino acid and polymer.*
in solving chemistry problem.

Main Reference Book:

1. *Pre-University Chemistry (2021), Norbani et al. SAP Publication.*
2. *Principles of Chemistry, A molecular Approach, 2nd Edition (2013), Nivaldo J. Tro, Pearson*
3. *General Chemistry: The Essential Concepts 5th Edition, International Edition (2008), Raymond Chang, Mc Graw Hill Higher Education.*
4. *General Chemistry, Principles and Structure, 5th Edition (1990), James E. Brady, Wiley.*

Assessment Methods: *Continuous Assessment: 50 %, Final Examination 50%*

Medium of Instruction: *English*

FAD1019 : PRACTICAL CHEMISTRY 2 *(3 credit hours)*

The topics of laboratory experiments are: chemical equilibrium, ionic equilibrium, thermochemistry, kinetic chemistry, stereoisomerism, alcohol & phenol, aldehyde & ketone.

At the end of the course, students must be able to:

1. *perform practical work according to the correct method*
2. *analyse basic chemistry principles of chemical equilibrium, ionic equilibrium, thermochemistry, kinetic chemistry, stereoisomerism and organic compound*
3. *demonstrate practical work individually or in groups*

Main Reference Books:

1. *Pre-University Chemistry (2021), Norbani et al. SAP Publication.*
2. *Organic Chemistry, 8th Edition (2013), L.G. Wade, Jr., Pearson.*
3. *Organic Chemistry for Matriculation, 2nd Edition (2009), Siti Asiah Ahmad Junan, Oriental Academic Publication.*
4. *General Chemistry: The Essential Concepts 5th Edition, International Edition (2008), Raymond Chang, Mc Graw Hill Higher Education.*

Assessment Methods: *Continuous Assessment: 100%*

Medium of Instruction: *English*

physics

FAD1020

Basic Physics 1

FAD1021

Practical Physics 1

FAD1022

Basic Physics 2

FAD1023

Practical Physics 2

FAD1020: BASIC PHYSICS 1 *(4 credit hours)*

Kinematics
Projectile motion; Newton's Law of Motion; Frictions; Work and energy.
Circular Motion
Centripetal acceleration and force; Center of mass and gravity; Torque; Equilibrium of rigid bodies; Moment of inertia; Rotational kinetic energy; Angular momentum and conservation of angular momentum.
Basic Materials Science
Intermolecular forces; Stress and strain; Young's modulus; Shear modulus and Bulk modulus; Materials structure; Materials classification; Properties of materials
Fluids
Archimedes' principle; Continuity equation; Bernoulli's principle; Viscosity
Simple harmonic motion
Kinematics of SHM and energy in SHM; Damped and forced oscillations; Resonance
Waves
Characteristics and types of waves; Resultant and superposition of waves; Huygens principle; Interference; Stationary wave
Physical Optics
Diffraction; Interference; Young's double slit experiment; Newton's ring; Thin film; Polarization
Sound wave
Intensity and sound level; Interference; Beat; Resonance; Doppler's Effect
Heat
Conduction, convection, and radiation; Linear, surface and volume expansions
Thermodynamics
Boyle's, Charles's, and Gay-Lussac laws; Kinetic theory of gases; Energy and work; Zeroth law and First law of thermodynamics; Isobaric, isovolumetric, isothermal, and adiabatic processes; Second law of thermodynamic; Entropy; Carnot engine

At the end of the course, the students must be able to:

(a) Understand the basic concept of physics in the topic of mechanics, basic materials science, fluids, simple harmonic motion, waves, physical optics, heat, and thermodynamics.

(b) Apply basic principles of physics to solve problems in the topic of mechanics, basic materials science, fluids, simple harmonic motion, waves, physical optics, heat, and thermodynamics

(c) Analyze the principle of physics to solve problems in the topic of mechanics, basic material science, fluids, simple harmonic motion, waves, physical optics, heat and thermodynamics.

(d) Actively responds directly or indirectly towards learning

Main Reference Books:

1. *College Physics 11th Edition (2018), R. A. Serway and Chris Vuille, Cengage Learning, Inc.*
2. *Ace Ahead STPM Text (Physics)(2016), First Term, Poh Liong Yong and Lee Beng Hin, Oxford Fajar.*
3. *Ace Ahead STPM Text (Physics)(2016), Second Term, Poh Liong Yong, Oxford Fajar.*
4. *Ace Ahead STPM Text (Physics)(2016), Third Term, Poh Liong Yong and Lee Beng Hin, Oxford Fajar.*

5. *Comprehensive College Physics Upgraded (2019), SAP Education*

6. *Physics, 7th Edition (2013), Douglas C. Giancoli, Pearson.*

7. *University Physics, 8th Edition (2003) Hugh D. Young, Addision-Wesley.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

FAD1021: PRACTICAL PHYSICS 1 *(2 credit hours)*

Laboratory experiments and experimental simulations under the topic of linear and rotational motion, materials science, fluids, simple harmonic motion, waves, physical optics, heat and thermodynamics

At the end of the course, the students must be able to:

(a) *Apply the basic principles of physics in experiments and experimental simulations done under the topic of linear and rotational motion, materials science, fluids, simple harmonic motion, waves, physical optics, heat, and thermodynamics*

(b) *Analyze data using the basic principle of physics in experiments done under the topic of linear and rotational motion, materials science, fluids, simple harmonic motion, waves, physical optics, heat, and thermodynamics.*

(c) *Execute the features and functions of physics simulations to achieve experimental objectives*

Main Reference Books:

1. *College Physics 11th Edition (2018), R. A. Serway and Chris Vuille, Cengage Learning, Inc.*

2. *Ace Ahead STPM Text (Physics)(2016), First Term, Poh Liong Yong and Lee Beng Hin, Oxford Fajar.*

3. *Ace Ahead STPM Text (Physics)(2016), Second Term, Poh Liong Yong, Oxford Fajar.*

4. *Ace Ahead STPM Text (Physics)(2016), Third Term, Poh Liong Yong and Lee Beng Hin, Oxford Fajar.*

5. *Comprehensive College Physics Upgraded (2019), SAP Education*

6. *Physics, 7th Edition (2013), Douglas C. Giancoli, Pearson.*

7. *University Physics, 8th Edition (2003) Hugh D. Young, Addision-Wesley.*

Assessment Methods: *Continuous Assessment 100%*

Medium of Instruction: *English*

FAD1022: BASIC PHYSICS 2 *(4 credit hours)*

Electrostatic
Charge and Coulomb's law; Electric field and electric flux; Gauss's law; Electric potential energy and electric potential; Capacitor and dielectric; Combination of capacitors; Charging and discharging of capacitors
Direct current
Kirchhoff's Rules and Electrical measurement.
Alternating current
Current and voltage; Phasor diagram, phase difference; resistance, reactance, and impedance; RL, RC and RLC circuits; Power and energy; Resonance
Magnetism
Magnetic field and magnetic force; Ampere's law; Force between two current carrying conductors; Torque; Charge in magnetic field and electric field
Electromagnetism
Magnetic flux; Faraday's law; Lenz law; Induced emf in a conductor; Self-inductance; Energy stored in an inductor; Mutual inductance
Electronics
Semiconductor, Diode, Capacitor, Transistor and Operational Amplifiers.
Quantum Physics
Atomic Physics, Nuclear Physics, Radioactivity, and wave-particle duality.

At the end of the course, the students must be able to:

(a) *Understand the basic concept of physics in the topic of electrostatic, electricity, magnetism, electromagnetism, electronics, and quantum physics*
(b) *Apply basic principles of physics to solve problems in the topic of electrostatic, electricity, magnetism, electromagnetism, electronics, and quantum physics.*
(c) *Analyze the principle of physics to solve problems in the topic of electrostatic, electricity, magnetism, electromagnetism, electronics, and quantum physics*
(d) *Actively responds directly or indirectly towards learning*

Main Reference Books:

1. *College Physics 11th Edition (2018), R. A. Serway and Chris Vuille, Cengage Learning, Inc.*
2. *Ace Ahead STPM Text (Physics)(2016), First Term, Poh Liong Yong and Lee Beng Hin, Oxford Fajar.*
3. *Ace Ahead STPM Text (Physics)(2016), Second Term, Poh Liong Yong, Oxford Fajar.*
4. *Ace Ahead STPM Text (Physics)(2016), Third Term, Poh Liong Yong and Lee Beng Hin, Oxford Fajar.*
5. *Comprehensive College Physics Upgraded (2019), SAP Education*
6. *Physics, 7th Edition (2013), Douglas C. Giancoli, Pearson.*
7. *University Physics, 8th Edition (2003) Hugh D. Young, Addision-Wesley.*

Assessment Methods: *Continuous Assessment: 50%, Final Examination: 50%*

Medium of Instruction: *English*

FAD1023: PRACTICAL PHYSICS 2 *(2 credit hours)*

Laboratory experiments and experimental simulations under the topic of electrostatics, electricity, magnetism, electromagnetism, electronics, and quantum physics.

At the end of the course, the students must be able to:

(a) Apply the basic principles of physics to solve problems in the topic of electrostatics, electricity, magnetism, electromagnetism, electronics, and quantum physics.

(b) Analyze data using the basic principle of physics in the topic of electrostatics, electricity, magnetism, electromagnetism, electronics, and quantum physics.

(c) Execute the features and functions of physics simulations to achieve experimental objectives.

Main Reference Books:

1. *College Physics 11th Edition (2018), R. A. Serway and Chris Vuille, Cengage Learning, Inc.*
2. *Ace Ahead STPM Text (Physics)(2016), First Term, Poh Liong Yong and Lee Beng Hin, Oxford Fajar.*
3. *Ace Ahead STPM Text (Physics)(2016), Second Term, Poh Liong Yong, Oxford Fajar.*
4. *Ace Ahead STPM Text (Physics)(2016), Third Term, Poh Liong Yong and Lee Beng Hin, Oxford Fajar.*
5. *Comprehensive College Physics Upgraded (2019), SAP Education*
6. *Physics, 7th Edition (2013), Douglas C. Giancoli, Pearson.*
7. *University Physics, 8th Edition (2003) Hugh D. Young, Addision-Wesley.*

Assessment Methods: *Continuous Assessment 100%*

Medium of Instruction: *English*

mathematics

FAD1013

Mathematics I

FAD1014

Mathematics II

FAD1015

Mathematics III

FAC1001

Advanced Mathematics I

FAC1002

Programming I

FAC1003

Programming II

FAC1004

Advanced Mathematics II

FAD1013: MATHEMATICS I *(4 credit hours)*

Algebra

Real numbers: The real number system, introduction to notations of sets of real numbers. The real number line. Algebraic operations on real numbers. Properties of real numbers.

Complex numbers: Algebraic operations on complex numbers. Conjugate. Argand diagram. Euler and De Moivre's theorems. Roots of a complex number.

Exponents, radicals and logarithms: Exponential notations, laws of exponents. Simplifying expressions. Rational exponents. Laws of radicals. Simplifying radical expressions. Solutions to exponential, radical and logarithmic equations.

Systems of equations in two variables: Revision of quadratic equations. Systems of linear equations. Systems involving linear and quadratic equations.

Inequalities: Basic concepts on inequalities. Inequalities in one variable; linear and quadratic. Rational inequalities, inequalities involving modulus. Solving by graphical method.

Polynomials; long division, synthetic division. Remainder theorem and factor theorem. Express polynomials in linear factors.

Partial fractions.

Vector algebra.

Trigonometry

Angles, Trigonometric Functions and Graphs. Trigonometric Values for Special Angles. Application of Trigonometric Problems. Trigonometric Identities and Proof. Trigonometric Equation & the addition and subtraction formulas. Multiple angles formula. Product to sum formula and sum-to-product formula.

Calculus

Basic Functions, Domains and Graphs: Linear, Quadratic, Cubic, Rational Logarithm, Exponential, Radical, Piecewise and Modulus Functions. Limit of a function intuitively. Limit theorems. Limit computational techniques. One-sided limits. Continuous at a point. Limit to infinity. Asymptote lines. Definition and geometric interpretation of differentiation. Differentiation from first principles. Differentiation of standard functions. Differentiation of trigonometric functions. Differentiation of logarithmic and exponential functions. Rules of differentiation. Chain rule and Power Rule. Differentiation of implicit functions and parametric equations. Logarithmic differentiations. Application of differentiations: gradient of any curve, equation of tangent and normal to any curve (curve including circle, parabola, hyperbola and ellipse).

Higher order differentiation. Increasing and decreasing functions. Critical/Stationary points. Local extremum. Absolute extremum. Concavity and Inflection point. Graph sketching. Optimization problems.

At the end of the course, students are able to:

1. *Describe relevant concepts, terminology, and notation in algebra, vector, function, differentiation, inequalities and complex numbers.*
2. *Use appropriate combinations of techniques to solve problems in algebra, vector, function, differentiation, inequalities and complex numbers.*
3. *Present written and verbal work/solution with avid interest and able to give opinion on the topic at hand.*

Main Reference Books:

1 *A. A. Shariff, F. A. Manaf & I. Mohamed. (2020). College Mathematics, IPTA Publisher.*
2 *A. H. Yaakub et. al. (2019). Mathematics for matriculation: Semester 2, Fifth Edition Updated. Oxford Fajar.*
3 *Ong Beng Sim et al. (2018). Mathematics for Matriculation Semester 1, Fifth Edition, Oxford Fajar.*
4 *Ong Beng Sim et al. (2018). Mathematics for Matriculation Semester 2, Fifth Edition, Oxford Fajar.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

FAD1014: MATHEMATICS II *(3 credit hours)*

Calculus:
Anti-derivative and standard results, definite integrals.

Techniques of integrations: integration using partial fractions, integration by substitution, integration by parts.

Integration of trigonometric functions.

Integration of the quadratic function by using the trigonometric substitution.

Application of integrations: area between two curves and volume of revolution.

First order differential equations.

Algebra:
Sequences: convergent and divergent sequence, the summation ($\sum$) notation.
Arithmetic series: arithmetic sequence, summation of finite arithmetic series.

Geometric series: geometric sequence, summation of a finite geometric series, summation of the infinite geometric series. Summation of a finite series: summation of $\sum i^k, k = 1,2,3,$ *method of difference.*

The binomial expansion: factorial, the binomial theorem for a positive integral index, the binomial theorem for any rational index.

Power series: Maclaurin and Taylor series for various functions, application of Maclaurin and Taylor series.

Geometry: Revisions on distance, gradients, straight lines. Angle between two lines. Perpendicular distance from a point to a line. Curves: parabolas, circles, ellipses and hyperbolas. Their definitions, equations, sketching their respective graphs.

At the end of the course, the students are able to:

(a) *Describe relevant concepts, terminology, and notation related to integration, differential equations, series and geometry.*
(b) *Use appropriate combinations of techniques to solve problems related to integration, differential equations, series and geometry.*
(c) *Present work/solution digitally, showing avid interest and able to give opinion on the topic assigned.*

Main Reference Books:

1. *Shariff, A. A., Manaf F. A. & Mohamed, I. (2020). Comprehensive College Mathematics Latest Syllabus, SAP Publication.*
2. *Yaakub, A. H., Sim, O. B., Zubairi, Y. Z., Eng, T. C., et.al. (2019). Mathematics for Matriculation Semester 2 Fifth Edition Updated, Oxford Fajar.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

FAD1015: MATHEMATICS III *(3 credit hours)*

Permutation and combination. Definition and rules of probability, conditional probability, independent events. Random variables, probability distributions of discrete and continuous random variables, expected values, variance and standard deviation. The uniform, binomial, Poisson and normal distributions. Poisson and normal approximation to the binomial distribution.

Hypothesis testing.

Matrices: algebra operations on matrices, using matrices to solve systems of linear equations, elementary row operations.

At the end of the course, the students are able to:

(a) *Describe relevant concepts, terminology, and notation related to matrices and statistics.*
(b) *Use appropriate combinations of techniques to solve problems in matrices and statistics.*
(c) *Use statistical software for data processing and evaluate results from the activity.*

Main Reference Books:

1. *Shariff A. A., Manaf F. A. & Mohamed I. (2020). College Mathematics, IPTA Publisher.*
2. *Levine, D. M. (2017). Statistics for managers using Microsoft Excel. Pearson.*
3. *Braun, W. J., & Murdoch, D. J. (2021). A first course in statistical programming with R. Cambridge University Press.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

FAC1001: ADVANCED MATHEMATICS I *(3 credit hours)*

Vector Geometry:
Vector quantity. Properties of vectors. Representation of vectors. Position vector. Resultant vector.

Example: Directed line segment for scalar multiplication, addition & subtraction of vectors. Negative vector, parallel vector, free vector. Triangle law, parallelogram & polygon. Vectors in geometry (proving the geometrical properties and ratio theorem). Vectors in velocity problems (resultant & relative velocity).

***Algebraic & Cartesian Vector (Vector in 3-dimensional)**:*
Magnitude and the distance between two points. Vector components. Unit vector. Direction ratio and direction cosines.

Algebraic operations of vectors: The laws of vector algebra. Operation of addition, subtraction and scalar multiplication. Scalar & vector product.

Applications of scalar & vector product: Angle between two vectors. Scalar and vector projections. Area of triangle and parallelogram. Volume of parallelepiped.

Lines and planes: Equations in vector, cartesian & parametric representations. Intersections of lines, planes and line-plane. Angles between lines, planes and line-plane. Distances between lines, planes and line-plane.

Vector calculus

Vector-valued functions: Two-dimensional and three-dimensional of parametric expressions in vector form, $\mathbf{r}(t) = f(t)\mathbf{i} + g(t)\mathbf{j} + h(t)\mathbf{k}$ *(straight line, parabola, circle, ellipse & helix).*
Vector functions: Limits, derivatives and integrals. Properties of vector derivatives. Velocity & acceleration.
The motion of an object in a plane (circular & projectile motion)

At the end of the course, students are able to:

(a) Describe fundamental vector concepts and principles in Vector Algebra, Cartesian & Geometry Vector and Vector Calculus.
(b) Apply appropriate vector methods to solve problems involving Vector Algebra, Cartesian & Geometry Vector and Vector Calculus.
(c) Present written and verbal solution through active involvement in group work.

Main Reference Books:

1. *Shariff, A. A., Manaf F. A. & Mohamed, I. (2020). Comprehensive College Mathematics Latest Syllabus, SAP Publication.*
2. *Polanco, C., (2019). Advanced Calculus – Fundamentals of Mathematics, Bentham Science Publishers Pte. Ltd. Singapore.*
3. *Nayak, P. K., (2017). Vector Algebra and Analysis with Applications, Universities Press (india) Pvt Ltd.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

FAC1002: PROGRAMMING I *(3 credit hours)*

The module will focus on Computer Information Systems with Computer Engineering Science, Discrete Mathematics, and Computing Algorithm.

At the end of the course, students are able to:

(a) *Describe concepts, terms, and notations related to programming as well as technical aspects such as computer hardware, computer software, computer code, truth tables and logic circuits.*
(b) *Solve problems in computer programming with theoretical frameworks (problem analysis and input-output charts), algorithms, pseudocode and simple coding.*

Main Reference Books:

1. *Mohammad, W. A. W., & Mydin, A. M. (2019). Introduction to C++ Programming (2nd ed.). Oxford Fajar : Oxford University Press.*
2. *Deitel, P. J., & Deitel, H. (2017). C++ How to Program (ISBN 9780134448237). Pearson.*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

FAC1003: PROGRAMMING II *(3 credit hours)*

This module will focus on C++ syntax coding to solve problems in computer programming.

At the end of the course, the students are able to:

(a) *Describe relevant concepts, terminology, and notation related to programming.*
(b) *Develop computer programs using a structured and modular approach in solving problems and syntax encoding with C++.*

Main Reference Books:

1. *Mohammad, W. A. W., & Mydin, A. M. (2019). Introduction to C++ Programming (2nd ed.). Oxford Fajar : Oxford University Press.*
2. *Deitel, P. J., & Deitel, H. (2017). C++ How to Program (10th edition). Pearson.*
3. *Gaddis, T., Walters, J., & Muganda, G. (2021). Starting out with C++. Early objects. Pearson Education.*

Assessment Methods: *Continuous Assessment 60%, Final Examination 40%*

Medium of Instruction: *English*

FAC1004: ADVANCED MATHEMATICS II *(3 credit hours)*

Complex numbers: Functions of complex numbers, loci, applications of complex numbers.

Inverse trigonometric and hyperbolic functions: graphs, identities, derivatives.

First Differential equation: Classifying and solution, Nonhomogeneous equations, exact equations, Bernoulli equations. Applications of differential equations.

At the end of the course, students are able to:

(a) *Explain concepts involving complex numbers, hyperbolic and inverse trigonometric functions, and differential equations.*

(b) *Apply appropriate techniques to solve problems involving complex numbers, hyperbolic and inverse trigonometric functions, and differential equations.*
(c) *Present written and verbal through active participation in group work.*

Main Reference Books:

1. *K.A. Stroud & D.J. Booth Bolton. (2020). Engineering Mathematics, Palgrave Mcmillan. (Seventh Edition).*
2. *K. Singh, Engineering Mathematics through applications. (2019). Palgrave Mcmillan. (Second Edition).*

Assessment Methods: *Continuous Assessment 50%, Final Examination 50%*

Medium of Instruction: *English*

self development course

FAX1001

Jati Diri **(Self Development Studies)**

FAX1001*: JATI DIRI (SELF DEVELOPMENT STUDIES)*

(2 credit hours)

1. ***Empowering study skills will focus on the following aspects:***
   - *(i) Critical & Creative thinking skills*
   - *(ii) Study groups & teamwork*
   - *(iii) Time management & Self- management*

2. ***Motivational aspects that concern***
   - *(i) Positive personal attributes*
   - *(ii) Attitude to help others*
   - *(iii) Attitude willing to change*
   - *(iv) How to judge self- weakness and strength in oneself*
   - *(v) How to create a positive self-image*
   - *(vi) How to face the challenges of identity in cyberspace or the ICT era*

3. *Coping with stress and stress management with reference to adolescent and student life. Causes of stress, symptoms of stress, and tips on managing stress successfully.*

4. *Reveal the characteristics of effective communication to students.*

5. *Enhancing knowledge of Malaysian statehood, as well as rights, roles, and responsibilities as citizens of Malaysia.*

At the end of the course, the students are able to:

(a) Explain the sense of their identity (Jati diri).

(b) Demonstrate a positive attitude, behavior, and leadership value.

(c) Communicate ideas clearly and effectively to the parties concerned.

Main Reference Book:

1. *Zainol Abidin Kasim (Third Edition, 2020), Jati diri: Pembinaan dan Pemantapan, Penerbit Universiti Malaya, Kuala Lumpur*

Assessment Methods: *Continuous Assessment 50%; Final Examination 50%*

Medium of Instruction: *Malay/English*

information technology

FAX1002

Information Technology

FAX1002: INFORMATION TECHNOLOGY *(1 credit hours)*

Synopsis

This course introduces the Microsoft 365 tools where students will use this throughout their learning in PASUM. In addition, basic of ICT and programming are involved in this course. The basic ICT topics covered are Information Technology Literacy, Information System, Social Informatics, Network Computing, IoT, Machine Learning and Virtual/Augmented Reality. Meanwhile, the basic programming topics are Theoretical Programming, Propositional Logic, Microsoft Excel and Numerical Programming.

At the end of the course, students are able to:

(a) Apply suitable ICT tools to solve ICT related problems.

(b) Giving presentation clearly and compact.

Main Reference Books

1. *Oxford Information Technology for CSEC: Third edition Paperback (2019) by Glenda Gay & Ronald Blades.*
2. *Office 365 All-in-One for Dummies (For Dummies (Computer/Tech)) 1st Edition (2019)*
3. *Computer Programming for Absolute Beginners: Learn essential computer science concepts and coding techniques to kick-start your programming career Paperback – July 31, 2020, by Joakim Wassberg.*
4. *Related Website*

Assessment Methods: *Assignment 1- 35% , Presentation 1- 15%;*

Assignment 2 – 35%, Presentation 2 - 15%

Medium of Instruction: *English*

english

FAX1005

English For Foundation Studies

FAX1006

Basic Communication Skills

FAX1005: ENGLISH FOR FOUNDATION STUDIES

(4 credit hours)

This is the initial course in upgrading students' competency level in the English language for the academic purpose especially for the MUET exam at the university level. They will continuously be exposed to many different aspect of the English language as required accordingly to to the CEFR standard. Thus, this syllabus will emphasize in sharpening students' knowledge in the four skills of language; listening, speaking, reading and writing. They will be listening to variation of texts to build up their listening skills. Students will also be given many different types of practices to build up their communication. This course will also expose the students to the different types of reading texts as well as emphasizing on their writing skills.

At the end of the course, students are able to:

(a) Derive information using listening skills

(b) Deliver ideas effectively through speaking and writing

(c) Analyse information from academic texts using reading skills

(d) Apply effective writing skills in essay writing and translating information from other source

Main Reference Book

1. *Choo Wan Yat, Yeoh Wei Tzee, Yee Sook Fen,*
   ACE MUET - A coursebook for the Malaysian University ENGLISH TEST – Based on the latest CEFR – aligned Test Specification. Penerbit Ehsan, 2022.

Assessment Methods: *Continuous Assessment: 50%, Final Examination: 50%*

Medium of Instruction: *English*

FAX1006: BASIC COMMUNICATION SKILLS

(2 credit hours)

This course is designed to sharpen students' knowledge in basic communication skills which focuses on initial interview techniques and academic presentation. Students will participate in continuous reading through study activities in preparation for the speech outline. This extensive reading will promote basic literacy skills as a preparation for their presentation. Students will be exposed to various basic interview techniques to aid them to articulate their abilities and knowledge in different interview situations. It will assist them to be more selective in applying appropriate techniques of interview skills. Extensive reading will be carried out in academic studies as a preparation for presentation.

At the end of the course, the students are able to:

(a) Present using the presentation skills they have learned

(b) Gather sources of information from reliable and trustworthy materials guidelines for an intended purpose.

(c) Equip students with the appropriate communication and interview skills

Main Reference Books

1. *Latisha Asmaak Shafie, Nor Alifah Rosaidi, English for Oral Presentations.Oxford University Press.2017*

2. *Steven Gershon,Present Yourself 2. Cambridge.2015*

3. *Stephen, E. Lucas.The Art Of Public Speaking*

4. *Oxford Advanced Learner's Dictionary Eight Edition. Oxford. Oxford University Press. 2010*

Assessment Methods: *Continuous Assessment: 50%, Final Examination: 50%*

Medium of Instruction: *English*

KEMUDAHAN DI KAMPUS

Penginapan

Terdapat empat belas buah kolej kediaman yang disediakan oleh pihak universiti. Semua pelajar Pusat Asasi Sains **DIWAJIBKAN** tinggal di Kolej Kediaman seperti yang diarahkan oleh Unit Penginapan Bahagian Hal Ehwal Pelajar.

Klinik Kesihatan Pelajar

Pihak universiti juga telah menyediakan perkhidmatan kesihatan di Klinik Kesihatan Pelajar yang terletak di Bangunan Siswarama, Fakulti Sastera & Sains Sosial Universiti Malaya. Klinik Kesihatan Pelajar memberi perkhidmatan pada setiap hari pada waktu pejabat. Waktu Perkhidmatan Klinik Kesihatan Pelajar seperti berikut:

Hari Isnin – Khamis	Hari Jumaat
8.30 pagi – 12.30 tengah hari	8.00 pagi – 11.45 tengah hari
2.00 petang – 4.30 petang	2.45 petang – 4.30 petang

Bilik Rawatan PASUM

PASUM sangat memandang serius isu kesihatan pelajar dan telah mengambil inisiatif bagi membantu pelajar yang mempunyai masalah kesihatan dengan menyediakan Bilik Rawatan yang boleh digunakan sebagai ruang beistirehat seketika sebelum meneruskan kuliah/amali/tutorial yang terletak di Aras Bawah Bangunan PASUM.

Sukan dan Rekreasi

Universiti dan kolej kediaman menyediakan banyak kemudahan seperti padang bola, padang hoki, gelanggang badminton, gimnasium, kolam renang dan pada setiap sesi banyak pertandingan diatur sama ada di peringkat kolej kediaman, universiti atau peringkat nasional.

Kebudayaan dan Kesenian

Sebagai sebahagian daripada masyarakat kampus pelajar-pelajar Pusat Asasi Sains boleh menyertai kegiatan kebudayaan dan kesenian yang dikendalikan oleh Jabatan Kebudayaan Fakulti Seni Kreatif, Universiti Malaya. Antara kesenian yang diajar ialah tarian tradisional, seni tampak dan alat muzik serta seni lukis.

Selain Jabatan tersebut, kolej kediaman juga mengatur banyak kegiatan kebudayaan yang mana pelajar-pelajar Pusat Asasi Sains boleh melibatkan diri pada masa lapang mereka.

Perpustakaan

Universiti juga menyediakan kemudahan perpustakaan yang mempunyai pelbagai jenis koleksi sama ada sebagai bahan rujukan atau boleh dipinjam. Setiap fakulti/jabatan juga mempunyai kemudahan bilik bacaan.

Penasihat Akademik

Pusat Asasi Sains telah melantik seorang penasihat akademik bagi setiap orang pelajar. Pelajar yang mempunyai masalah boleh berunding dan mendapat nasihat dari penasihat akademik masing-masing. Di samping itu, semua kakitangan Pusat Asasi Sains sentiasa bersedia membantu pelajar yang datang meminta bantuan.

Kaunseling dan Kerjaya

Kakitangan Unit Kaunseling dan Kerjaya Bahagian Hal Ehwal Pelajar sentiasa bersedia untuk memberi khidmat nasihat tentang rancangan kerjaya, termasuk latihan dan peluang pekerjaan. Mereka juga membantu pelajar-pelajar yang mempunyai masalah dalam pengajian, ketegangan, masalah peribadi dan keluarga secara sulit dan peribadi. Dari masa ke semasa, unit ini juga menganjurkan kursus Sistem Pembelajaran Berkesan bagi membantu pelajar-pelajar. Pelajar yang ingin bertemu kaunselor boleh berbuat demikian pada setiap hari Selasa dan Khamis dengan membuat temu janji di pejabat PASUM sebelum berjumpa pihak kaunselor.

TATASUSILA PAKAIAN & PENAMPILAN DIRI PELAJAR

UNIVERSITI MALAYA
DRESS CODE FOR STUDENTS OF UNIVERSITY OF MALAYA

Peraturan ini dibuat dengan peruntukan kaedah 26, Kaedah-Kaedah Universiti Malaya (Tatatertib Pelajar-Pelajar) 1999. Peraturan ini bertujuan untuk memberi garis panduan mengenai tatacara berpakaian dan penampilan diri yang sesuai untuk dipatuhi oleh semua pelajar Universiti Malaya.

These rules are made in accordance with Rule 26, the University of Malaya (Dicipline of Students) Rules 1999. The rules aim to provide guidelines on the appropriate dress code and conduct to be observed by all students of the University of Malaya.

PERATURAN | *GENERAL RULES*

(1) Setiap pelajar diwajibkan **MEMAKAI KAD MATRIKS** semasa menghadiri/berada di seluruh Pejabat Pentadbiran Universiti termasuk dewan kuliah dewan peperiksaan, bilik seminar, perpustakaan atau majlis rasmi.
*Every student is required **TO DISPLAY THEIR MATRIC CARD** when attending or when they are present in the vicinity of the University's Administration Offices including lecture halls, examination halls, seminar rooms, libraries and in any formal ceremony.*

(2) Semua pelajar dikehendaki mematuhi peraturan atau syarat pakaian yang telah ditetapkan khusus untuk tempat tertentu seperti di perpustakaan, makmal, gelanggang sukan, surau, dewan makan, di majlis rasmi universiti dan lain-lain.
Each students is required to abide by the rules indicated at specific venues such as the library, laboratory, sports arena, prayer room, dining hall, at formal university function and so forth.

(3) Berpakaian kemas dan sopan, contoh: baju kemeja, baju kemeja T, berseluar panjang bagi lelaki dan berbaju kurung, kebaya labuh atau pakaian etnik masing-masing atau berpakaian menutup aurat bagi pelajar Muslim; dan
Wear neat and decent attire, for instance: shirt, T-shirts, long pants for male students and baju kurung, kebaya labuh or any ethnic costumes or decent clothing approved for Muslim students, and

(4) Bersepatu
Shoes

PENGUATKUASAAN | *ENFORCEMENT*

Semua pegawai Universiti termasuk kakitangan pentadbiran, akademik, keselamatan dan perpustakaan adalah diberi kuasa memberi amaran dan menghalang pelajar yang tidak mematuhi peraturan Universiti Malaya.
All officers of the University including administrative, academic, security and library staff are empowered to issue warning and to bar any student who does not follow the rules.

YANG DILARANG | *PROHIBITED*


Berseluar Jeans Bercompang-camping
Tattered/Ripped Jeans


Berseluar Ketat
Tight Pants


Berseluar Pendek
Shorts


Baju T Bergambar Yang Bertentangan Tatasusila
T-Shirt with Derogatory Picture/ Words

Tanpa Lengan
Sleeveless


Baju Jarang dan Ketat
Tight and See-Through Clothes


Mendedahkan Bahagian Badan
Body-Revealing Clothes


Skirt Pendek menampakkan Lutut
Skirt that shows the Knee


Berselipar
Flip-Flops


Rambut Yang Tidak Kemas
Unruly Hair


Akesesori Muka
Face Accessories



Berambut Warna Fesyen Ganjil
Brighty Coloured and Odd Hairstyles

DIKELUARKAN OLEH: *ISSUED BY:*
BAHAGIAN HAL EHWAL PELAJAR *STUDENT AFFAIRS DIVISION*

TARIKH DIKELUARKAN: *DATE OF ISSUANCE:*
JANUARI 2012 *JANUARY 2012*

TATASUSILA PAKAIAN DAN PENAMPILAN DIRI PELAJAR

Pusat Asasi Sains telah menetapkan bahawa semua pelajar berdaftar di Pusat Asasi Sains hanya dibenarkan memakai pakaian berikut sepanjang minggu Haluansiswa dan sepanjang mengikuti pengajian di Pusat Asasi Sains (termasuk semasa berurusan di pejabat).

Pelajar Lelaki

1. Kemeja berlengan pendek/panjang dan hendaklah dimasukkan ke dalam seluar (*tuck-in)*.
2. Seluar panjang jenis *slack* sahaja. Seluar *jeans* tidak dibenarkan.
3. Pelajar dikehendaki berambut pendek dan disikat rapi.
4. Pelajar diwajibkan memakai baju labuh makmal (*lab-coat)* dan kasut bertutup di dalam makmal.

Pelajar Perempuan

1. Pakaian yang sopan dan longgar seperti baju kurung/kebaya/jubah dan seumpamanya sahaja.
2. Pemakaian seluar *(pants)* tidak dibenarkan.
3. Pelajar yang berambut panjang perlu diikat rapi.
4. Pelajar diwajibkan memakai baju labuh makmal (*lab-coat)* dan kasut bertutup di dalam makmal.

PERHATIAN

Semua pelajar **TIDAK** dibenarkan memakai yang berikut:

(a) Selipar – termasuk semua jenis selipar, capal dan sandal
(b) Kemeja T (*T-Shirts*)
(c) *Jeans*
(d) Topi/*Cap*
(e) Sarung tangan
(f) Apa-apa pakaian yang menutup semua atau sebahagian muka **KECUALI** pelitup muka
(g) Pakaian yang tidak sopan dan tidak sesuai dengan keadaan

PERINGATAN

Pusat Asasi Sains berhak menghalang pelajar daripada mengikuti kelas pengajaran jika didapati pelajar tidak mematuhi tatasusila pakaian yang tersebut di atas. Tindakan tatatertib akan diambil pada bila-bila masa juga jika didapati pelajar ingkar dengan peraturan yang ditetapkan.

PENGGUNAAN KAD MATRIK PASUM

Pelajar Pusat Asasi Sains adalah DIWAJIBKAN memakai kad matrik sepanjang tempoh pengajian seperti mana peraturan yang telah ditetapkan oleh Universiti

KESALAHAN DAN TATATERTIB DI KAWASAN KAMPUS

Kesalahan berikut adalah merupakan perkara yang tidak boleh dilakukan oleh pelajar-pelajar sepanjang pengajian Asasi Universiti Malaya.

(a) Menghisap rokok/vape/seumpamanya
(b) Terlibat dalam penyalahgunaan dadah
(c) Tidak mematuhi etika berpakaian PASUM
(d) Tidak memakai *lab coat* di dalam makmal (yang berkenaan)
(e) Memakai selipar / sandal
(f) Tidak hadir kelas (kuliah/tutorial/amali)
(g) Menggunakan telefon bimbit / *headphone* dalam dewan/makmal/kelas **KECUALI** untuk kegunaan pengajaran dan pembelajaran sahaja
(h) Membawa kenderaan persendirian (kereta/motosikal)
(i) Lain-lain keadaan yang dianggap satu kesalahan di kampus

Sekiranya pelajar didapati ingkar dan sengaja melanggar amaran dan tindakan tatatertib akan diambil. Seterusnya surat peringatan akan dikeluarkan kepada pelajar dan makluman kepada ibu bapa /penjaga.

KEGIATAN PELAJAR

kegiatan PELAJAR

Pelajar PASUM adalah digalakkan untuk mengambil bahagian dalam aktiviti kokurikulum yang dijalankan oleh pihak Pusat Asasi Sains dan kolej kediaman bagi membantu meningkatkan kemahiran berfikir, jati diri dan sahsiah pelajar.

Markah merit kokurikulum juga adalah penting dan akan diambil kira bagi permohonan UPU*Online* untuk melanjutkan pengajian ke peringkat ijazah sarjana muda.

PROSEDUR & LAMPIRAN PENTING PASUM

Lampiran A

PUSAT ASASI SAINS
UNIVERSITI MALAYA

PROSEDUR PENARIKAN DIRI DARIPADA PROGRAM

Pelajar yang hendak menarik diri daripada program pengajian PASUM adalah dikehendaki untuk mengikuti prosedur berikut:

i. Log in ke portal MAYA (maya.um.edu.my) menggunakan *username* dan kata laluan siswamail;
ii. Klik *Tab Enrollment;*
iii. Mohon *Programme Withdrawal* **(Bukan *Semester Withdrawal*)**;
iv. Muatnaik surat tawaran biasiswa / dokumen berkenaan bagi menyokong permohonan penarikan diri pelajar daripada program.

Pihak PASUM akan mempertimbang permohonan penarikan diri pelajar berdasarkan justifikasi dan dokumen sokongan yang diberikan dan seterusnya mendapatkan perakuan daripada pihak Seksyen Kemasukan dan Pendaftaran.

Sekiranya permohonan penarikan diri diluluskan, surat pengesahan tarik diri universiti boleh dimuat turun melalui portal MAYA.

Pelajar yang tidak memohon penarikan diri mengikut prosedur yang ditetapkan akan menimbulkan kesulitan pada pihak pelajar pada masa akan datang.

UNIVERSITI MALAYA

BORANG PINDAAN MAKLUMAT PERIBADI

Pindaan kepada (Sila tanda √ pada kotak berkenaan):

☐ Ejaan Nama/No. Kad Pengenalan/Lain-lain (Sila nyatakan: _____)

☐ Alamat surat-menyurat

Nama Pelajar: _____
(Gunakan huruf besar dan ejaan nama seperti di dalam kad pengenalan)

No. Kad Pengenalan: _____ No. Pendaftaran: _____

Program: _____ Sesi/Semester: _____

Alamat Baru: _____

_____

No. Tel (Rumah): _____ No. Tel (Bimbit): _____

Tandatangan: _____ Tarikh: _____

(Untuk kegunaan pejabat)

Pindaan telah dibuat kepada:

☐ Sistem Maklumat Pelajar (SKR) pada _____

☐ Fail Peribadi Pelajar (PASUM) pada _____

Tandatangan kakitangan: _____ Tarikh: _____

Lampiran C
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UNIVERSITI MALAYA

PERMOHONAN CUTI/PENGECUALIAN DARIPADA KULIAH/TUTORIAL/AMALI

Nama Pelajar : _____

Aliran : _____ Kumpulan : _____ No. Matrik : _____

Alamat Rumah : _____

_____

_____

No. Telefon : _____ Tarikh cuti/pengecualian : _____

Nyatakan sebab memohon cuti/pengecualian **dan** sila lampirkan dokumen pengesahan :

_____

_____

Sekiranya cuti telah diambil sebelum borang dihantar, sila nyatakan sebab kelewatan permohonan ini :

_____

_____

Tandatangan Pelajar : _____ Tarikh : _____

Untuk Kegunaan Pejabat

Kelulusan Pengarah :

	DILULUSKAN

	TIDAK DILULUSKAN

Ulasan Pengarah :

_____

_____

Tandatangan Pengarah : _____ Tarikh : _____

NOTA PENTING : *Sila semak semula keputusan permohonan di Pejabat PASUM selepas tiga (3) hari permohonan dibuat. Terima kasih.*

UNIVERSITI MALAYA

BORANG TATATERTIB PELAJAR

Nama Pelajar:_____

No. Pendaftaran:_____ Kumpulan:_____

Kesalahan / Pelanggaran Peraturan:

☐ Menghisap rokok/vape/seumpamanya

☐ Terlibat dalam penyalahgunaan dadah

☐ Tidak mematuhi etika berpakaian PASUM

☐ Tidak memakai *lab coat* di dalam makmal (yang berkenaan)

☐ Memakai selipar / sandal

☐ Tidak hadir kelas (kuliah/tutorial/amali) Kod Kursus: _____

☐ Menggunakan telefon bimbit / *headphone*

☐ Membawa kenderaan persendirian (kereta/motosikal)

☐ Lain-lain - Sila nyatakan:

Tarikh Kesalahan dilakukan: _____ Nama Pelapor : _____
(lampirkan bukti sekiranya ada)

Tarikh & Masa : _____

Tandatangan Pelajar : _____

Tindakan pelapor : ☐ Diberi amaran secara lisan

UNTUK KEGUNAAN JAWATANKUASA TATATERTIB

Perakuan dari Jawatankuasa Tatatertib:

☐ Surat peringatan kali _____

☐ Direkodkan dalam fail peribadi pelajar

☐ Maklumkan kepada Penasihat Akademik / Ibu bapa / Kolej Kediaman

☐ Dibawa ke Jawatankuasa Tatatertib Pusat

**pilih yang berkenaan sahaja*

Tandatangan Pengerusi Jawatankuasa Tatatertib: _____

Tarikh: _____

PUSAT ASASI SAINS
UNIVERSITI MALAYA

PERMOHONAN SESI PERJUMPAAN PELAJAR BERSAMA KAUNSELOR PELAJAR

Bahagian A – *Diisi oleh Pelajar*

Nama Penuh : _____

No Pendaftaran: _____ No. Kad Pengenalan : _____

No Telefon : _____ No. Kumpulan : _____

Alamat Emel : _____

Cadangan Tarikh dan Masa Pelajar ingin berjumpa Kaunselor:

Tarikh	Hari	Masa
1.		
2.		

Tandatangan pelajar :_____ Tarikh :_____

Bahagian B – *Kegunaan Pejabat PASUM*

Tarikh	Hari	Masa

Kaunselor yang akan hadir : _____

Tarikh Memaklumkan kepada Pelajar : _____

Staf Bertugas : _____

UNIVERSITI MALAYA

BORANG PERMOHONAN SALINAN SLIP KEPUTUSAN PEPERIKSAAN / SURAT PENGESAHAN PELAJAR / LAIN-LAIN

BAHAGIAN A : BUTIR PERIBADI

Nama : _____

(SILA GUNAKAN HURUF BESAR)

No. Matrik : _____ No. K/P : _____

Aliran / Kumpulan : _____ No. Telefon : _____

Alamat : _____

_____

BAHAGIAN B : BUTIR PEMOHON

Saya ingin memohon perkara-perkara seperti berikut:

Sila tandakan (√) pada ruangan berkenaan :

☐ Salinan Slip Keputusan Peperiksaan Semester _____ Sesi _____

☐ Surat Pengesahan Pelajar PASUM

☐ Lain-lain (Sila nyatakan : _____)

Sebab ingin memohon : _____

_____

Tandatangan : _____ Tarikh : _____

(UNTUK KEGUNAAN PEJABAT)

Tarikh Terima : _____

Penyerahan kepada kakitangan bertanggungjawab (nama kakitangan) : _____

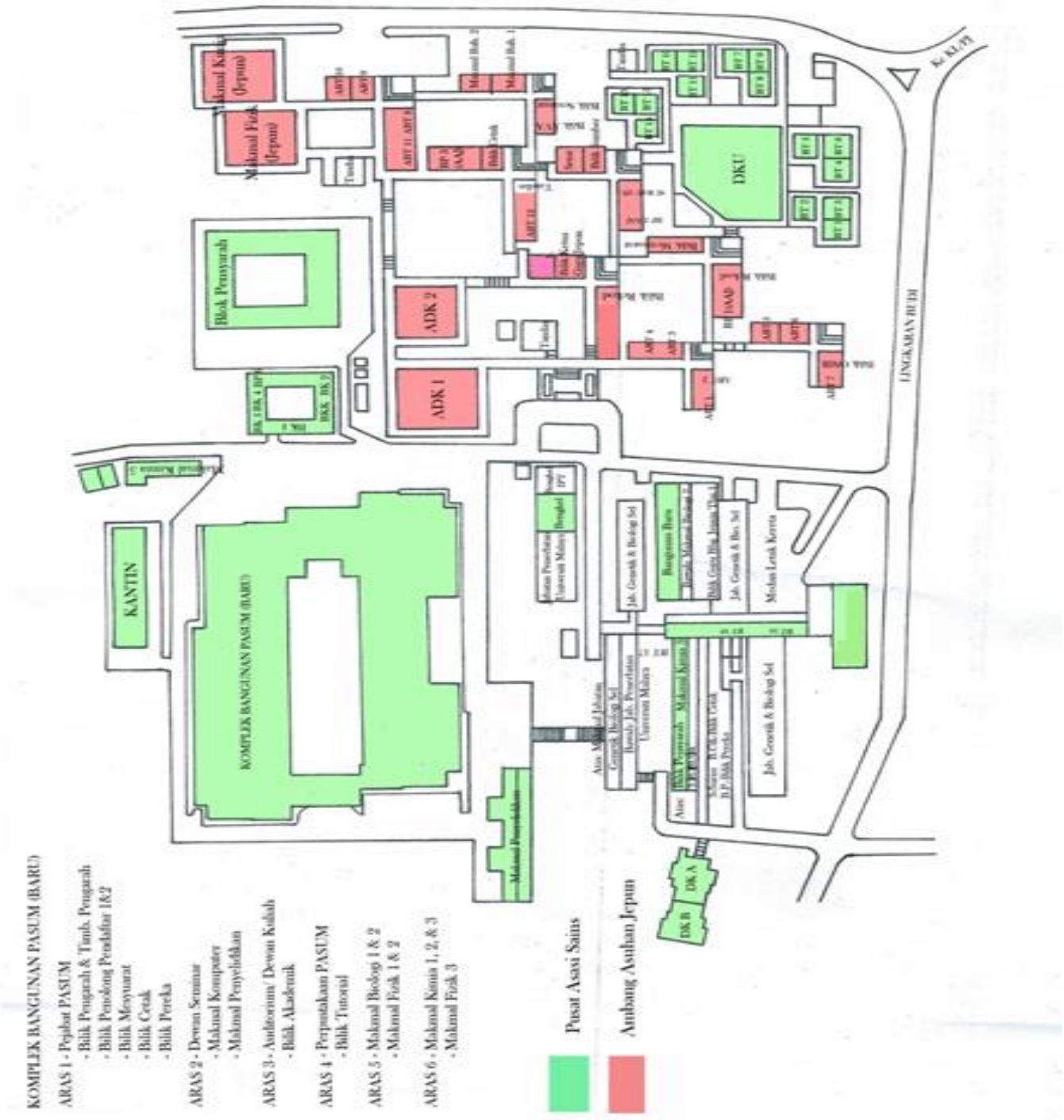
Tandatangan kakitangan bertugas : _____

TATACARA PENGGUNAAN

e-pay @ um

PELAN LOKASI

pusat asasi sains



NOMBOR-NOMBOR

telefon

Pejabat Am PASUM	03 – 7967 5929 / 5922 / 5873 / 5821
Pejabat Keselamatan Universiti	03 – 7967 7070
Klinik Kesihatan Pelajar Universiti Malaya	03 – 7967 6444 / 6445
Bendahari – Bahagian Kewangan Pelajar	03 – 7967 7770
Seksyen Kemasukan dan Pendaftaran	03 – 7967 3440 / 3441
Bank Islam Malaysia Berhad Cawangan UM	03 – 7960 7429
Kolej Kediaman Dayasari (KK5)	03 – 7956 7948
Kolej Kediaman Ungku Aziz (KK11)	03 – 7954 0806
Kolej Kediaman Raja Dr. Nazrin Shah (KK12)	03 – 7957 7367
Pusat Perubatan Universiti Malaya	03 – 7649 4422
Balai Polis Pantai	03 – 2282 2222
Balai Bomba Pantai	03 – 2282 4444
Hospital Pantai	03 – 2296 0888