BUKU
PANDUAN PASCASISWAZAH
POSTGRADUATE GUIDEBOOK

Fakulti Farmasi

Sesi Akademik 2026-2027

Faculty of Pharmacy

Academic Session 2026-2027

PENGURUSAN FAKULTI FARMASI, UNIVERSITI KEBANGSAAN MALAYSIA



PENGURUSAN FAKULTI FARMASI, UNIVERSITI KEBANGSAAN MALAYSIA

<table>
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PANDUAN PASCASISWAZAH
Fakulti Farmasi
Sesi Akademik 2026-2027

Fakulti Farmasi
Universiti Kebangsaan Malaysia
Kampus Kuala Lumpur • 2026
http://www.ukm.my/farmasi

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Universiti Kebangsaan ini merupakan puncak dari usaha kita ke arah memenuhi tuntutan dan aspirasi rakyat yang ingin melihat bahawa bahasa ibunda mempunyai kedaulatan dan kedudukan yang sewajarnya di dalam usaha memenuhi keperibadian nasional

(Ucapan Tun Abdul Razak di Konvokesyen Pertama UKM, 1973)



UNIVERSITI KEBANGSAAN MALAYSIA
National University of Malaysia

LAMBANG

Universiti Kebangsaan Malaysia (UKM) ialah sebuah perisai yang berpetak empat. Setiap petak mengandungi gambar dan warna latar yang berlainan dengan membawa maksud tertentu. Gambar yang didapati dalam petak tersebut ialah seperti berikut:

- Seekor harimau berwarna kuning yang gagah sedang menyerang ke arah kanan berlatar warna merah.
- Simbol atom berlatar warna kuning.
- Simbol teknologi berlatar warna biru.
- Sekuntum bunga raya berwarna merah berlatar warna putih.

BUKU

Buku melambangkan ilmu pengetahuan, iaitu peranan utama UKM sebagai institusi pengajian tinggi dan penyelidikan.

PERISAI

Perisai bererti keteguhan. Keteguhan yang dimaksudkan ialah kemampuan UKM memainkan peranan sebagai institusi pengajian tinggi di negara ini.

HARIMAU

Harimau melambangkan keberanian dan kegagahan. Harimau mencerminkan masyarakat Malaysia yang berteraskan kebudayaan Melayu. Harimau garang menggambarkan kesediaan dan keupayaan UKM mara memerangi kejahilan, kejahatan dan kepalsuan.

ATOM DAN TEKNOLOGI

Simbol atom dan teknologi melambangkan konsep pembangunan negara yang berlandaskan sains dan teknologi moden. UKM sebagai institusi ilmu bertanggungjawab mengeluarkan tenaga mahir dalam semua bidang untuk memenuhi keperluan pembangunan negara.

BUNGA RAYA

Bunga raya adalah bunga kebangsaan Malaysia. Lima helai ranggi melambangkan lima prinsip Rukun Negara yang dihayati dan sentiasa dipelihara oleh rakyat Malaysia.

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Kata Alu-aluan



Assalamualaikum w.b.t dan Salam Sejahtera

Saya merakamkan setinggi-tinggi tahniah kepada saudara dan saudari yang telah terpilih melanjutkan pengajian ke peringkat pascasiswazah di Universiti Kebangsaan Malaysia (UKM) yang ditubuhkan hasil aspirasi rakyat yang ingin mendaulatkan bahasa Melayu sebagai bahasa ilmu tinggi dalam semua peringkat pengajian.

Saya juga mengucapkan terima kasih kepada saudara-saudari yang telah memilih UKM untuk menyambung pengajian peringkat tinggi. Sebagai pelajar pascasiswazah, saya berharap saudara dan saudari dapat mengambil peluang dan inisiatif untuk memperkayakan ilmu pengetahuan dengan memberikan sumbangan terhadap hala tuju penyelidikan UKM. Keterlibatan saudara-saudari dalam bidang penyelidikan amat digalakkan melalui pengwujudan kemudahan penyelidikan dan pembelajaran yang terbaik serta skim galakan penyelidikan untuk pelajar pascasiswazah menghasilkan inovasi yang berkualiti dan bertaraf dunia. Kepakaran dan hasil penyelidikan yang dijalankan juga diharap dapat menyumbang secara signifikan kepada pembangunan negara dan kecemerlangan UKM selaras dengan hala tuju strategik UKM.

Saya yakin dengan pengalaman dan kemahiran yang ada, saudari dan saudari boleh menjadi rakan pembimbing kepada pelajar prasiswazah dan bersama-sama bergandīng bahu menjayakan hasrat UKM untuk melahirkan modal insan yang berkualiti. Saudara dan saudari juga digalakkan untuk menyertai secara aktif dalam pelbagai aktiviti keilmuan seperti persidangan, seminar dan penerbitan bagi memantapkan pengetahuan dan mematangkan pengalaman masing-masing.

Saya berharap saudara dan saudari terus meningkatkan usaha dan tekad untuk menjadi pelajar pascasiswazah yang berupaya memberi sumbangan besar terhadap kecemerlangan universiti, masyarakat dan negara.

Sekian.

Prof. Dato' Dr. Sufian Jusoh
Naib Canselor
Universiti Kebangsaan Malaysia

LAMPIRAN 1

PINDAAN

Kemaskini : 5 Mei 2026

KALENDAR SESI AKADEMIK 2026/2027 - *ACADEMIC CALENDAR 2026/2027 SESSION*
UNIVERSITI KEBANGSAAN MALAYSIA

PRASISWAZAH (KAMPUS INDUK BANGI, FFAR, FSK) & SISWAZAH (KAMPUS INDUK BANGI, FFAR, FSK & FPER-kecuali Program Doktor Pakar)
UNDERGRADUATE (MAIN CAMPUS BANGI, FFAR, FSK) & POSTGRADUATE (MAIN CAMPUS BANGI, FFAR, FSK & FPER-except Master Clinical)

Fakulti/Institut/Pusat *Faculty/Institute/Centre*	Perkara/ *Items*	Semester 1		Semester 2		Semester 3	
		Tarikh/ *Dates*	Tempoh/ *Duration*	Tarikh/ *Dates*	Tempoh/ *Duration*	Tarikh/ *Dates*	Tempoh/ *Duration*
Fakulti/*Faculty*	Pendaftaran Diri Pelajar Baharu (Pascasiswazah)/ *Registration for New Students (Postgraduate)*	14 - 27 Sept. 2026 *14th - 27th Sept. 2026*	2 minggu *2 weeks*	15 - 28 Feb. 2027 *15th - 28th Feb. 2027*	2 minggu *2 weeks*	-	-
Ekonomi dan Pengurusan/ *Economics & Management*	Lapor Diri Pelajar Baharu dan MAW (Prasiswazah)/ *Registration for New Students & MAW (Undergraduate)*	19 - 27 Sept. 2026 *19th - 27th Sept. 2026*	1 minggu *1 week*	-	-	-	-
Farmasi/ *Pharmacy*	Sesi Pembelajaran (Prasiswazah dan Pascasiswazah)/ *Lectures (Undergraduate and Postgraduate)*	28 Sept. - 6 Nov. 2026 *28th Sept. - 6th Nov. 2026*	6 minggu *6 weeks*	1 - 7 Mac 2027 *1st - 7th March 2027*	1 minggu *1 week*	12 Julai - 29 Ogos 2027 *12th July - 29th Sept. 2027*	7 minggu *7 weeks*
Kejuruteraan dan Alam Bina/ *Engineering & Built Environment*	Cuti Perayaan/ Festives Holiday	-	-	8 - 14 Mac 2027 *8th - 14th March 2027*	1 minggu *1 week*	-	-
Pendidikan/ *Education*	Sesi Pembelajaran (Prasiswazah dan Pascasiswazah)/ *Lectures (Undergraduate and Postgraduate)*	-	-	15 Mac - 18 Apr. 2027 *15th March - 18th Apr. 2027*	5 minggu *5 weeks*	-	-
Perubatan/ *Medicine*	Cuti Pertengahan Semester/ *Mid Semester Break*	9 - 15 Nov. 2026 *9th - 15th Nov. 2026*	1 minggu *1 week*	19 - 25 Apr. 2027 *19th - 25th Apr. 2027*	1 minggu *1 week*	-	-
Pengajian Islam/ *Islamic Studies*	Sesi Pembelajaran (Prasiswazah dan Pascasiswazah)/ *Lectures (Undergraduate and Postgraduate)*	16 Nov. 2026 - 10 Jan. 2027 *16th Nov. 2026 - 10th Jan. 2027*	8 minggu *8 weeks*	26 Apr. - 13 Jun 2027 *26th Apr. - 13th June 2027*	7 minggu *7 weeks*	-	-
Sains dan Teknologi/ *Science & Technology*	Majlis Konvokesyen UKM ke-54/ *The 54th UKM Convocation Ceremony*	21 - 30 Nov. 2026 *21st - 30th Nov. 2026*	10 hari *10 days*	-	-	-	-
Sains Kesihatan/ *Health Science*	Minggu Ulangkaji/ *Revision Week*	11 - 17 Jan. 2027 *11th - 17th Jan. 2027*	1 minggu *1 week*	14 - 20 Jun 2027 *14th - 20th June 2027*	1 minggu *1 week*	-	-
Sains Sosial dan Kemanusiaan/ *Social Sciences & Humanities*	Peperiksaan/ *Examinations*	18 Jan. - 7 Feb. 2027 *18th Jan - 7th Feb. 2027*	3 minggu *3 weeks*	21 Jun - 11 Julai 2027 *21st June - 11th July 2027*	3 minggu *3 weeks*	30 Ogos - 5 Sept. 2027 *30th Aug. - 5th Sept. 2027*	1 minggu *1 week*
Teknologi dan Sains Maklumat/ *Information Science & Technology*	Cuti Semester/ *Semester Break*	8 - 28 Feb. 2027 *8th Feb. - 28th Feb. 2027*	3 minggu *3 weeks*	12 Julai - 12 Sept. 2027 *12th July - 12th Sept. 2027*	9 minggu *9 weeks*	-	-
Undang-Undang/ *Law*							
Institut/*Institute*							
ATMA, IKMAS, IMEN, INBIOSIS, HADHARI, KITA, LESTARI, SERI, SELFUEL, UMBI, IPI, IIR4.0							
Pusat/*Centre*							
CITRA Universiti							

Cuti Umum Semester 1

Hari Deepavali - 8 November 2026 (Ahad)
Cuti Perayaan Hari Deepavali - 9 November 2026 (Isnin)
Hari Keputeraan Sultan Selangor - 11 Disember 2026 (Jumaat)
Hari Krismas - 25 Disember 2026 (Jumaat)
Tahun Baharu - 1 Januari 2027 (Jumaat)
Hari Thaipusam - 22 Januari 2027 (Jumaat)
Hari Wilayah Persekutuan - 1 Februari 2027 (Isnin)
Hari Tahun Baru Cina - 6 & 7 Februari 2027 (Sabtu & Ahad)
Cuti Perayaan Hari Tahun Baru Cina - 8 Februari 2027 (Isnin)
Nuzul Quran - 24 Februari 2027 (Rabu)

Cuti Umum Semester 2 & Semester 3

Hari Raya Aidil Fitri - 10 & 11 Mac 2027 (Rabu & Khamis)
Hari Pekerja - 1 Mei 2027 (Sabtu)
Hari Raya Aidil Adha - 17 Mei 2027 (Isnin)
Hari Wesak - 20 Mei 2027 (Khamis)
Pesta Kaamatan - 30 & 31 Mei 2027 (Ahad & Isnin)
Hari Gawai - 1 & 2 Jun 2027 (Selasa & Rabu)
Hari Keputeraan YDP Agong - 7 Jun 2027 (Isnin)
Awal Muharam (Maal Hijrah) - 7 Jun 2027 (Isnin)
Maulidur Rasul - 15 & 16 Ogos 2027 (Ahad & Isnin)
Hari Kebangsaan - 31 Ogos 2027 (Selasa)
Hari Malaysia - 16 September 2027 (Khamis)

Tertakluk kepada perubahan

Public Holidays Semester 1

Deepavali - 8th November 2026 (Sunday)
Deepavali Holiday - 9th November 2026 (Monday)
Sultan of Selangor's Birthday - 11th December 2026 (Friday)
Christmas Day - 25th December 2026 (Friday)
New Year's Day - 1st January 2027 (Friday)
Thaipusam Day - 22nd February 2027 (Friday)
Federal Territory Day - 1st February 2027 (Monday)
Chinese New Year - 6th & 7th February 2027 (Saturday & Sunday)
Chinese New Year Holiday - 8th February 2027 (Monday)
Nuzul Quran - 24th February 2027 (Wednesday)

Public Holidays Semester 2 & Semester 3

Hari Raya Aidil Fitri - 10th & 11th March 2027 (Wednesday & Thursday)
Labour Day - 1st May 2027 (Saturday)
Hari Raya Aidil Adha - 17th May 2027 (Monday)
Wesak Day - 20th May 2027 (Thursday)
Harvest Festival - 30th & 31st May 2027 (Sunday & Monday)
Hari Gawai - 1st & 2nd June 2026 (Tuesday & Wednesday)
Birthday of Yang di-Pertuan Agong - 7th June 2027 (Monday)
Awal Muharram - 7th June 2027 (Monday)
Maulidur Rasul - 15th & 16 August 2027 (Sunday & Monday)
National Day - 31st August 2027 (Tuesday)
Malaysia Day - 16th September 2027 (Thursday)

Subject to changes

Nota

*Sempena perayaan **Hari Raya Aidilfitri** yang dijangka jatuh pada **10-11 Mac 2027 (Rabu dan Khamis) pada minggu ke-2 semester 2**, aktiviti pengajaran & pembelajaran (P&P) serta sebarang bentuk penilaian bagi **minggu pertama dan minggu kedua (1-14 Mac 2027)** akan dijalankan secara hibrid/atas talian, tertakluk kepada kesesuaian program pengajian pelajar dan pertimbangan pihak fakulti/universiti.

** Segala aktiviti pengajaran & pembelajaran (P&P) serta sebarang bentuk penilaian bagi **minggu ke-12 hingga minggu ke-14 (17 Mei - 6 Jun 2027) semester 2** akan dijalankan secara hibrid/atas talian, tertakluk kepada kesesuaian program pengajian pelajar dan pertimbangan pihak fakulti/universiti bersempena dengan cuti-cuti umum berikut:

a) Hari Raya Aidiladha yang dijangka jatuh pada 17 Mei 2027 (Isnin) – Minggu ke-12;
b) Hari Wesak yang dijangka jatuh pada 20 Mei 2027 (Khamis) – Minggu ke-12;
c) Pesta Keamatan pada 30 & 31 Mei 2027 (Ahad & Isnin) – Minggu ke-13 dan minggu ke-14;
d) Hari Gawai pada 1-2 Jun 2027 (Selasa & Rabu) – Minggu ke-14;
e) Hari Keputeraan KDYMM Seri Paduka Baginda Yang di-Pertuan Agong pada 7 Jun 2027 (Isnin) – Minggu ke-15; dan
f) Awal Muharram yang dijangka jatuh pada 7 Jun 2027 (Isnin) – Minggu ke-15;

***** Segala aktiviti pengajaran & pembelajaran (P&P) serta sebarang bentuk penilaian yang dijalankan secara hibrid/atas talian di atas adalah TERTAKLUK kepada kesesuaian program pengajian pelajar dan pertimbangan pihak fakulti/universiti.**

PIHAK BERKUASA DAN PEGAWAI PENGURUSAN UNIVERSITI KEBANGSAAN MALAYSIA TAHUN 2026

CANSELOR

Duli Yang Maha Mulia Yang di-Pertuan Besar Negeri Sembilan Darul Khusus
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D.K., D.M.N., D.K. (Perak)., D.K. (Perlis)., D.K. (Selangor)., D.K. (Kedah)., D.K. (Kelantan)., D.K. (Johor)., D.K. (Terengganu)., D.K.Y.R., P.P.T., LLB (Aberystwyth)., Hon. LLD (South Wales)., Hon. Fellow (Aberystwyth)., FRCSEd (Hon), Hon. Fellow (AFP)

PRO-CANSELOR

YAM Tunku Besar Seri Menanti Tunku Ali Redhauddin Ibni Tuanku Muhriz
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YBhg. Datuk Johan Idris

Ahli-ahli LPU

Naib Canselor
YBhg. Prof. Dato' Dr. Sufian Jusoh

Wakil Kementerian Pendidikan Tinggi
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Wakil Sektor Swasta
YBhg. Dato' Hisham Nordin

Wakil Alumni
YBhg. Dato' Yeow Wah Chin

Wakil Berpengetahuan dan Berpengalaman
YBhg. Prof. Dr. Mohamad Tajuddin Haji Mohamad Rasdi

AHLI EX-OFFICIO

Timbalan Naib Canselor (Hal Ehwal Akademik dan Antarabangsa)
YBhg. Prof. Dato' Dr. Fariza Md Sham

Timbalan Naib Canselor (Hal Ehwal Penyelidikan dan Inovasi)
YBhg. Prof. Dr. Ismanizan Ismail

Timbalan Naib Canselor (Hal-Ehwal Pelajar dan Alumni)
YBhg. Prof. Ts. Dr. Hj. Norinsan Kamil Othman

Timbalan Naib Canselor (Hal Ehwal Jaringan Industri dan Masyarakat)
YBhg. Prof. Dr. Bariah Mohd Ali

Bendahari
Puan Norini Mohamad

Ketua Pustakawan
Encik Hazmir Hj. Zainal

Penasihat Undang-Undang
YBhg. Prof. Datuk Dr. Sabirin Ja'afar

Pendaftar
Tuan Haji Zanudin Mohd. Daud
Setiausaha

PEGAWAI PENGURUSAN TERTINGGI

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Timbalan Naib Canselor (Hal Ehwal Akademik dan Antarabangsa)
YBhg. Prof. Dato' Dr. Fariza Md. Sham

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YBhg. Prof. Ts. Dr. Hj. Norinsan Kamil Othman

Timbalan Naib Canselor (Hal-ehwal Penyelidikan dan Inovasi)
YBhg. Prof. Dr. Ismanizan Ismail

Timbalan Naib Canselor (Hal-Ehwal Jaringan Industri dan Masyarakat)
YBhg. Prof. Dr. Bariah Mohd Ali

Pendaftar
Tuan Haji Zanudin Mohd Daud

Bendahari
Puan Norini Mohamad

Ketua Pustakawan
Encik Hazmir Hj. Zainal

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Pro Naib Canselor (Strategi & Pembangunan Korporat)
YBhg. Prof. Dato' Dr. Haji Roslee Rajikan

Pro Naib Canselor (Penjanaan & Prasarana)
YBhg. Prof. Sr. Ts. Dr. Adi Irfan Che Ani

Pro Naib Canselor (Kampus KL)
YBhg. Prof. Dato' Dr. Razman Jarmin

Pejabat Pengurusan Risiko, Kelestarian dan Kesihatan Pekerjaan (ROSH-UKM)
Prof. Ts. Dr. Kadir Arifin

DEKAN / PENGARAH
FAKULTI / INSTITUT / PUSAT

DEKAN FAKULTI

Fakulti Kejuruteraan dan Alam Bina
Prof. Dr. Zainuddin Sajuri

Fakulti Pendidikan
Prof Dr. Mohd Mahzan Awang

Fakulti Perubatan
Prof. Dato' Dr. Marina Mat Baki

Fakulti Sains Kesihatan
Prof. Dr. Suzana Shahar

Fakulti Sains dan Teknologi
Prof. Ts. Dr. Faizal Mohamed

Fakulti Sains Sosial dan Kemanusiaan
Prof. Dr. Kadaruddin Aiyub

Fakulti Teknologi dan Sains Maklumat
Prof. Dr. Shahrul Azman Mohd Noah

Fakulti Ekonomi dan Pengurusan
Prof. Dr. Mohd. Azlan Shah Zaidi

Fakulti Pengajian Islam
YBhg. Prof. Dato' Dr. Mohd Izhar Ariff Mohd Kashim

Fakulti Farmasi
Prof. Dr. Mohd Makmor Bakry

Fakulti Undang-undang
Prof. Dr. Rasyikah Md. Khalid

Fakulti Pengajian Sains Citra
Prof. Dr. Sharifa Ezat Wan Puteh

Graduate School of Business (UKM-GSB)
Prof. Madya Dr. Puan Yatim

PENGARAH INSTITUT

Institut Kajian Etnik (KITA)
YBhg. Prof. Ulung Datuk Dr. Shamsul Amri Baharuddin

Institut Islam Hadhari (HADHARI)
Dr. Norshariani Abd Rahman
Menjalankan Tugas

Institut Kejuruteraan Mikro dan Nanoelektronik (IMEN)
Prof. Ir. Dr. Ahmad Ashrif A. Bakar

Institut Penyelidikan Tenaga Suria (SERI)
Prof. Dr. Norasikin Ahmad Ludin

Institut Perubahan Iklim (IPI)
Prof. Madya Dr. Zaini Sakawi

Institut Informatik Visual (IVI)
Prof. Ir. Dr. Riza Sulaiman

Institut Biologi Molekul Perubatan UMBI)
Prof. Madya Dr. Nor Azian Abdul Murad

Institut Biologi Sistem (INBIOSIS)
Prof. Dr. Syarul Nataqain Baharum

Institut Alam dan Tamadun Melayu (ATMA)
Prof. Dr. Asyaari Muhamad

Institut Sel Fuel (SELFUEL)
Prof. Ir. Dr. Siti Kartom Kamarudin

Institut Alam Sekitar dan Pembangunan (LESTARI)
Prof. ChM. Dr. Goh Choo Ta

Institut Kajian Malaysia dan Antarabangsa (IKMAS)
Prof. Dr. Mohd Kamarulnizam Abdullah

Institut Pembangunan dan Kemajuan Inklusif Malaysia (MINDA-UKM)
YBhg. Prof. Tan Sri Dato' Seri Dr. Noor Azlan Ghazali

PENGARAH HOSPITAL

Hospital Canselor Tuanku Muhriz (HCTM)
YBhg. Dato' Dr. Azmi Baharudin

Hospital Tunku Ampuan Besar Tuanku Aishah Rohani
Hospital Pakar Kanak-Kanak UKM (Hospital TABTAR)
Prof. Dr. Hamzaini Abdul Hamid

PENGARAH PUSAT PENGAJIAN

Pusat PERMATA@Pintar Negara
Prof. Madya Dr. Yazrina Yahya

Pusat Pembentukan Pendidikan Lanjutan & Profesional (UKMSHAPE)
Lt. Kdr. (B) TLDM Prof. Madya Dr. Lokhman Hakim Osman

PENGARAH PUSAT PERKHIDMATAN

Pusat Teknologi Maklumat
Prof. Dr. Mohamad Hanif Md Saad

Jabatan Pembangunan Prasarana UKM
Encik Zolkefli Mohamed

Pusat Pengajaran dan Pembangunan Kurikulum
Prof. Madya Dr. Zulkefli Mansor

Pusat Jaringan Industri dan Komuniti
Dr. Aida Hanim A. Hamid

Pusat Pembangunan Keusahawanan dan EKS (UKM-CESMED)
Prof. Madya Dr. Muhamad Azry Khoiry

Pusat Pengurusan Penyelidikan dan Instrumentasi (CRIM)
Prof. Ir. Dr. Abu Bakar Sulong

Pusat Jaminan Kualiti
Prof. Dr. Kamisah Osman

Pusat Inovasi dan Pemindahan Teknologi (INOVASI@UKM)
Prof. Dr. Sawal Hamid Md Ali

Pusat Pengurusan Akademik
Prof. Madya Dr. Irman Abdul Rahman

Penerbit UKM
Prof. Madya Dr. Jemaima Che Hamzah

Pusat IDEA
Prof. Dr. Mohd Cairul Iqbal Mohd Amin

Pusat Pembangunan Karier (KARIER UKM)
Dr. Wardah Mustafa Din
Menjalankan tugas

Pusat Tadbir Urus dan Amalan Peraturan Baik UKM (GOVERNAN UKM)
Dr. Hajah Ina Md Yasin

Pusat Perundingan Strategik Antarabangsa dan Matlamat Pembangunan Mampan UKM (UKM ISN-SDG)
YBhg. Prof. Dato' Ts. Dr. Norazah Mohd Nordin

Pusat Hubungan Antarabangsa (UKM Global)
Prof. Madya Dr. Akmal Bin Sabarudin

Pusat Kesatria Universiti (KESATRIA)
Lt Kol. Prof. Madya Mohd Jasmy Abd Rahman

Pusat Komunikasi Korporat (KOMUNIKASI UKM)
Encik Saipulizam Abd. Ghani

Pusat Hal Ehwal Pelajar (HEP UKM)
Prof. Madya Ts. ChM. Dr. Darfizzi Derawi

Pusat Pengurusan Makmal Alami dan Fizikal UKM
Prof. Madya Dr. Wan Mohd Aizat Wan Kamaruddin

Pusat Perhubungan Alumni
Dr. Roslan Ja'afar

Pusat Perumahan Pelajar
Encik Mohd Firdaus Yahaya

Pusat Kebudayaan
Encik Mohamed Asrof Semin

Pusat Sukan Universiti
Dr. Nur Shakila Mazalan

Pusat Kesihatan Universiti
Prof. Madya Dr. Isa Naina Mohamed

Pusat Islam
Dr. Abu Dardaa Mohamad

Pejabat Yayasan Canselor
Prof. Madya Dr. Amizawati Mohd

Unit Integriti & Ombudsman
Prof. Dr. Zinatul 'Ashiqin Zainol

Unit Audit Dalam
Encik Ishak Md. Saboo

PENGETUA KOLEJ KEDIAMAN

Kolej Rahim Kajai
Prof. Dr. Razaleigh Muhamat @ Kawangit

Kolej Ungku Omar
Prof. Madya Ts. Dr. Darman Nordin

Kolej Keris Mas
Dr. Mohd Shahril Nizam Md Radzi

Kolej Pendeta Za'ba
Prof. Madya Ts. Dr. Saiful Irwan Zubairi

Kolej Tun Hussien Onn
Prof. Madya P.Geol. Ts. Dr. Mohd Hariri Arifin

Kolej Dato' Onn
Prof. Madya Dr. Zaizul Ab. Rahman

Kolej Burhanuddin Helmi
Prof. Madya Chm. Dr. Nur Hasyareeda Hassan

Kolej Ibu Zain
Ts. Dr. Nurhidayah Bahar

Kolej Aminuddin Baki
Dr. Lai Wei Sieng

Kolej Ibrahim Yaakob
Dr. Seri Mastura Mustaza

Kolej Tun Syed Nasir
Prof. Madya Dr. Mohd Razif Shahril

Kolej Tun Dr. Ismail
Prof. Dr. Mohd Razif Mohammad Yunus

Kolej Ke-13
Yang Mulia Dr. Tengku Hasnan Tengku Abdul Aziz

FALSAFAH, VISI DAN MISI UKM

Falsafah

Paduan antara iman kepada Allah dengan ilmu yang bermanfaat serta gabungan antara teori dengan amal adalah dasar utama bagi perkembangan ilmu, proses pembinaan masyarakat terpelajar dan pembangunan Universiti.

Visi

UKM bertekad menjadi Universiti terkehadapan yang mendahului langkah masyarakat dan zamannya bagi membentuk masyarakat dinamik, berilmu dan berakhlak mulia.

Misi

Menjadi Universiti terpilih yang memartabatkan bahasa Melayu serta mensejagatkan ilmu beracuan budaya kebangsaan.

IMBASAN SEJARAH
UNIVERSITI KEBANGSAAN MALAYSIA

Cetusan pertama gagasan perlunya pendidikan tinggi untuk orang Melayu muncul dalam Mesyuarat Majlis Raja- raja pada tahun 1903. Za'ba, seorang cendekiawan, menulis berkenaan gagasan tersebut dalam akhbar Lembaga Melayu pada tahun 1917. Gerakan pemikiran, perdebatan serta tekad golongan cendekiawan Melayu untuk menubuhkan sebuah universiti dan menggunakan Bahasa Melayu sebagai bahasa pengantar di institusi pengajian tinggi bermula pada tahun 1923 apabila Abdul Kadir Adabi, seorang lagi cendekiawan Melayu mengemukakan memorandum gagasan tersebut kepada DYMM Sultan Kelantan. Namun demikian, pemikiran dan tekad tersebut tidak dapat berkembang dan terlaksana kerana wujudnya pelbagai halangan dan rintangan oleh tekanan kolonialisme.

Mulai tahun 1957 hingga 1967, perjuangan untuk penubuhan universiti kebangsaan menjadi semakin bersemarak sebagai memenuhi tuntutan dan semangat kemerdekaan bangsa dan negara. Sehubungan itu, pada 1968 cendekiawan Melayu telah membentuk sebuah jawatankuasa penaja yang berperanan merancang penubuhan sebuah universiti kebangsaan. Pelbagai forum budaya dan politik diadakan bagi mendapat sokongan kerajaan dan rakyat untuk mewujudkan sebuah institusi pengajian tinggi yang memartabatkan Bahasa Melayu sebagai bahasa pengantar dalam semua bidang pangajian dan keilmuan. Perjuangan yang tidak pernah luput itu mencapai kejayaan dengan penubuhan Universiti Kebangsaan Malaysia (UKM) pada 18 Mei 1970 yang memulakan operasi pertamanya di Lembah Pantai Kuala Lumpur. Kumpulan pertama pelajar prasiswazah seramai 192 orang dan dua (2) orang pascasiswazah mula mendaftar di tiga (3) buah fakulti iaitu Fakulti Sains, Fakulti Sastera dan Fakulti Pengajian Islam.

Pada tahun 1974, UKM menubuhkan UKM Kampus Sabah di Kebun Kawang, Papar. Nama Kebun Kawang kemudiannya ditukar kepada Limauan oleh Tun Datu Mustapha Datu Harun yang ketika itu sebagai Ketua Menteri Sabah. Kampus yang menempatkan Fakulti Sains dan Sumber Alam ini berpindah ke Bukit Padang, Kota Kinabalu pada tahun 1980. Seterusnya berpindah ke Menggatal, Tuaran pada tahun 1990 bersama Fakulti Sains Pembangunan yang asalnya ditempatkan di Kampus Induk Bangi. Dengan penubuhan Universiti Malaysia Sabah pada tahun 1994, UKM Kampus Sabah ditutup secara rasminya pada tahun 1996 dan kedua-dua fakulti berkenaan dipindahkan ke Kampus Induk Bangi, Selangor.

Sejak 56 tahun penubuhannya, UKM telah menghasilkan 254,330 graduan. Universiti ini terus berkembang pesat sebagai sebuah universiti awam terkehadapan yang kini mempunyai 14 fakulti dan 13 institut penyelidikan. UKM juga mempunyai entiti yang beroperasi secara komersil, iaitu UKM Holdings Sdn. Bhd. sebagai satu pendekatan dalam mengkomersilkan dan memasyarakatkan kepakaran yang dimiliki di samping menjana kewangan Universiti.

Kampus induk UKM di Bangi yang memulakan operasinya pada tahun 1977 mempunyai keluasan 1,096.29 hektar. Kampus Induk Bangi menempatkan sepuluh (10) fakulti, dan dua belas (12) institut penyelidikan. Manakala Kampus Kuala Lumpur UKM yang terletak di Jalan Raja Muda Abdul Aziz, Kuala Lumpur menempatkan Fakulti Sains Kesihatan, Fakulti Pergigian dan Fakulti Farmasi dengan keluasan 20 hektar. Kampus Kuala Lumpur UKM yang terletak di Cheras dengan keluasan 22.3 hektar menempatkan Fakulti Perubatan, Hospital Canselor Tuanku Muhriz (HCTM), Hospital Tunku Ampuan Besar Tuanku Aishah Rohani, Hospital Pakar Kanak-Kanak UKM (Hospital TABTAR) dan Institut Biologi Molekul Perubatan (UMBI).

Berasaskan kecemerlangan dalam bidang penyelidikan lebih lima dekad, UKM dipilih sebagai salah sebuah universiti penyelidikan di Malaysia pada tahun 2006. UKM juga adalah penerima Anugerah Kualiti Perdana Menteri 2006, memperoleh status SwaAkreditasi pada 2010 dan diberikan status Universiti Autonomi pada Januari 2012. Penganugerahan ini adalah pengiktirafan bagi kecemerlangan UKM dalam bidang akademik dan tadbir urus.

Sebagai panduan kepada seluruh warga universiti untuk meningkatkan kecemerlangan universiti kebangsaan ini, UKM telah merangka Pelan Strategik Tekad 57 UKM 2026-2030 yang merupakan dokumen hala tuju strategik universiti yang menggariskan komitmen UKM untuk terus unggul sebagai universiti kebangsaan yang relevan, berdaya saing, mampan dan berimpak dalam persekitaran pendidikan tinggi yang semakin kompleks dan dinamik. TEKAD 57 ini sewajarnya menjadi nadi dan nafas untuk universiti bergerak ke hadapan dan melangkah jauh. Ia juga perlu difahami dan dihayati serta diterapkan dalam aspek pengembangan akademik, kecemerlangan penyelidikan, pembangunan pelajar dan pemerkasaan jaringan antarabangsa serta khidmat komuniti.

Bagi memastikan roh perjuangan para pelopor UKM terus subur dan segar, kesedaran terhadap sejarah penubuhan dibugar secara berterusan. Menginsafi bahawa UKM adalah institusi harapan masyarakat, seluruh warga universiti sama ada warga kerja mahupun pelajar diimbau supaya menyelami dan memahami keperluan rakyat menerusi persoalan yang berlegar dalam kehidupan bernegara. Namun ini tidak menghadkan jangkauan universiti terhadap segenap perkembangan malah pergolakan yang berlaku di peringkat antarabangsa. Universiti yang memiliki pelbagai kepakaran merentas disiplin diyakini berupaya melangkaui garis psikologikal yang membolehkannya beraksi tangkas dalam arena global serta berupaya memberi penyelesaian permasalahan yang menghambat kehidupan sejagat.

Pentadbiran Fakulti Farmasi (*Faculty of Pharmacy Administration*)

Dekan
Dean
Prof. Dr. Mohd bin Makmor Bakry

Timbalan Dekan (Akademik)
Deputy Dean (Academic)
Prof. Madya *(Associate Prof.)* Dr. Ernieda binti Md Hatah

Timbalan Dekan (Penyelidikan dan Inovasi)
Deputy Dean (Research and Innovation)
Prof. Dr. Haliza binti Katas

Timbalan Dekan (Hal Ehwal Jaringan Industri dan Masyarakat)
Deputy Dean (Industry and Community Partnerships)
Prof. Madya *(Associate Prof.)* Dr. Mohd Hanif bin Zulfakar

Penolong Dekan (Kualiti dan Strategi)
Assistant Dean (Quality and Strategy)
Prof. Madya *(Associate Prof.)* Dr. Adyani binti Md Redzuan

Penolong Dekan (Hal Ehwal Pelajar dan Alumni)
Assistant Dean (Students Affairs and Alumni)
Dr. Nurul Ain binti Mohd Tahir

Penolong Dekan (Keusahawanan)
Assistant Dean (Entrepreneurship)
Dr. Shamin bin Mohd Saffian

Penolong Dekan (Pengajaran dan Citra)
Assistant Dean (Teaching and Citra)
Dr. Mohd Kaisan bin Mahadi

Pengerusi Pusat Kajian Pengurusan Berkualiti Ubat-Ubatan
Chairperson Centre of Quality Management of Medicines
Prof. Madya *(Associate Prof.)* Dr. Farida Hanim binti Islahudin

Pengerusi Pusat Kajian Teknologi Penyampaian Dadah dan Vaksin
Chairperson Centre for Drug and Vaccine Delivery Research
Prof. Madya *(Associate Prof.)* Dr. Ng Shiow Fern

Pengerusi Pusat Kajian Pembangunan Dadah dan Herba
Chairperson Centre for Drug and Herbal Centre
Prof. Madya *(Associate Prof.)* Dr. Norsyahida binti Mohd Fauzi

Ketua Program Prasiswazah
Head of Undergraduate Programmes
Prof. Madya *(Associate Prof.)* Dr. Noraida binti Mohamed Shah

Ketua Program Siswazah
Head of Postgraduate Programmes
Dr. Chua Eng Wee

Ketua Jaringan Industri dan Komuniti
Head of Industry Network & Community
Prof. Madya *(Associate Prof.)* Dr. Norazrina binti Azmi

Penyelaras Disiplin Kimia Farmaseutikal
Coordinator for Pharmaceutical Chemistry Discipline
Prof. Madya *(Associate Prof.)* Dr. Lam Kok Wai

Penyelaras Disiplin Biofarmasi dan Farmakologi
Coordinator for Biopharmacy and Pharmacology Discipline
Dr. Nor Syafinaz binti Yaakob

Penyelaras Disiplin Farmaseutik
Coordinator for Pharmaceutics Discipline
Prof. Madya *(Associate Prof.)* Dr. Fazren bin Azmi

Penyelaras Disiplin Amalan Farmasi
Coordinator for Pharmacy Practice Discipline
Dr. Nor Asyikin binti Mohd Tahir

Penyelaras Program Siswazah (Penyelidikan)
Coordinator for Postgraduate (Research) Programme
Dr. Syaratul Dalina binti Yusoff

Penyelaras Program Sarjana Farmasi Klinikal
Coordinator for Master of Clinical Pharmacy Programme
Prof. Madya *(Associate Prof.)* Dr. Chong Wei Wen

Penyelaras Program Sarjana Sains (Analisis Farmaseutikal)
Coordinator for Master of Science (Pharmaceutical Analysis) Programme
Prof. Madya *(Associate Prof.)* Dr. Juriyati binti Jalil

Penyelaras Hubungan Antarabangsa
Coordinator for International Relations
Dr. Chandini Menon a/p Premakumar

Penyelaras Strategik dan Penarafan
Coordinator of Strategy and Ranking
Dr. Zainol Akbar bin Zainal

Penyelaras Alumni
Coordinator for Alumni
Dr. Tuan Mazlelaa binti Tuan Mahmood

Penyelaras Komunikasi Strategik
Coordinator for Strategic Communications
Dr. Nur Vaizura binti Mohamad

Penyelaras Hal-ehwal Pelajar
Coordinator for Students Affairs
Dr. Hanisah binti Azhari

Ketua Pentadbiran/Penolong Pendaftar
Head of Administration/Assistant Registrar
Encik (*Mr.*) Thohir bin Hasim

Ketua Pegawai Sains/ Penyelaras Perkhidmatan Makmal
Senior Science Officer/ Coordinator for Laboratory Services
ChM. Hazni Falina binti Mohamad

Penyelaras Unit Perkhidmatan Farmasi & Komuniti
Coordinator for Pharmacy & Community Service
Cik (Ms) Nurfaizza binti Sainal

Ahli Akademik (*Academic Staff*)

Profesor (*Professors*)
Mohd Cairul Iqbal bin Mohd Amin, RPh, BSc (Pharm) (Hons) (Manchester), PhD (Manchester)
Jamia Azdina binti Jamal, DNS, RPh, BPharm (Hons) (Nottingham), MSc (London), PhD (London)
Mohd bin Makmor Bakry, RPh, Dip. (Lab.Tech) (USM), BPharm (Hons) (UKM), MPharm (Clin) (USM), PhD (Glasgow)
Haliza binti Katas, RPh, BPharm (Hons) (UKM), PhD (London)

Profesor Madya (*Associate Professors*)
Adyani binti Md Redzuan, RPh, BSc (Pharm) (Hons) (Canada), MPharm (Clin) (USM), PhD (Glasgow)
Chong Wei Wen, RPh, BPharm (Hons) (UKM), PhD (Sydney)
Ernieda binti Md Hatah, RPh, BPharm (Hons) (UKM), MPharm (Clin) (USM), PhD (Otago)
Farida Hanim binti Islahudin, RPh, MPharm (Hons) (Nottingham), MClinPharm (UKM), PhD (Nottingham)
Fazren bin Azmi, BBiotech (Hons) (Uni. of Queensland), PhD (Uni. of Queensland)
Juriyati binti Jalil, BSc (Hons) (UKM), MSc (UKM), PhD (UKM)
Khairana binti Husain, BSc (Hons) (UKM), MSc (UKM), PhD (UPM)
Lam Kok Wai, BSc (Hons) (UPM), PhD (UPM)
Malina binti Jasamai, RPh, BPharm (Hons) (Cardiff), PhD (Cardiff)
Mazlina binti Mohd Said, RPh, BPharm (Hons) (IIUM), PhD (London)
Mohd Hanif bin Zulfakar, RPh, BPharm (Hons) (UKM), PhD (Cardiff)
Ng Shiow Fern, RPh, MPharm (Hons) (IMU-Strathclyde), PhD (Strathclyde)
Noraida binti Mohamed Shah, RPh, MPharm (IMU-Strathclyde), MPharm (Clin) (USM), PhD (Belfast)
Norazrina binti Azmi, RPh, BPharm (Hons) (UKM), PhD (Nottingham)
Norsyahida binti Mohd Fauzi, BSc (UPM), PhD (Strathclyde)

Pensyarah Kanan (*Senior Lecturers*)
Adliah binti Mhd Ali, RPh, BPharm (Hons) (UKM), MPharm (Clin) (USM), PhD (Monash)
AKM Moyeenul Huq, BSc (Pharm)(Hons)(Bangladesh), Msc (PharmTech)(Bangladesh), PhD (UKM)
Chandini Menon A/P Premakumar, BSc (Pharm) (Hons) (UKM), PhD (University of Liverpool)
Chua Eng Wee, RPh, BPharm (Hons) (UKM), PhD (Otago)
Hanisah binti Azhari, RPh, BPharm (Otago), Post. Grad. Cert. in Pharmacy (Otago), PhD (Otago)

Mohd Kaisan bin Mahadi, BSc (Adelaide), BHlthSc (Hons) (Adelaide), PhD (Leeds)
Ng Pei Yuen, RPh, MPharm (Hons) (IMU-Strathclyde), PhD (Strathclyde)
Nor Asyikin binti Mohd Tahir, BPharm (Otago), PhD (UKM)
Nor Hidayah binti Mustafa, BSc (UKM), MSc (UKM), PhD (UKM)
Nor Syafinaz binti Yaakob, BSc (Melbourne), Hons Deg PharmSc (Monash), PhD (Monash)
Nur Vaizura binti Mohamad, BSc (Hons)(UKM), Msc (UKM), PhD (UKM)
Nurul Ain binti Mohd Tahir, RPh, BPharm (Hons) (UKM), PhD (Uni, of Newcastle)
Shamin bin Mohd Saffian, RPh, BPharm (Otago), PgCertPharm (Otago), PhD (Otago)
Siti Azdiah binti Abdul Aziz, RPh, BSc (Pharm)(Hons)(Canada), MPharm.Clin. (UKM), PhD (UM)
Syaratul Dalina binti Yusoff, BSBM (Hons) (UIAM), MPharmSc (Tasmania), PhD (Birmingham)
Tuan Mazlelaa binti Tuan Mahmood, RPh, BPharm (Hons) (UKM), PhD (Belfast)
Zainol Akbar bin Zainal, RPh, BSc (Pharm) (Hons) (Canada), MPharm.Clin. (UKM), PhD (Clinical Pharmacy) (USM)

Sejarah Penubuhan (*History of Establishment)* Fakulti Farmasi (*Faculty of Pharmacy*)

Fakulti Farmasi, UKM Kampus Kuala Lumpur mempunyai sejarahnya yang tersendiri. Pada peringkat awal penubuhannya, ia dikenali sebagai Jabatan Farmasi dan beroperasi di bawah Fakulti Sains Kesihatan Bersekutu (FSKB), UKM. Jabatan ini ditubuhkan pada 1994 dengan tujuan memenuhi keperluan industri farmaseutikal dan menampung kekurangan bilangan profesional dalam sains farmaseutikal khususnya ahli farmasi. Seramai 21 orang pelajar menjadi kohort pertama dan memulakan pengajian mereka pada sesi akademik 1995-1996 di bawah program Sarjana Muda Farmasi dengan Kepujian.

The Faculty of Pharmacy at the UKM Kuala Lumpur Campus has a unique history. In its early years, it was known as the Department of Pharmacy and operated under the Faculty of Allied Health Sciences (FSKB), UKM. Established in 1994, the department aimed to meet the needs of the pharmaceutical industry and address the shortage of professionals in pharmaceutical science, particularly pharmacists. The first cohort of 21 students commenced their studies in the 1995/1996 academic session under the Bachelor of Pharmacy (Honours) programme.

Lokasi asal Jabatan Farmasi terletak di Jalan Temerloh, Kuala Lumpur sebelum berpindah ke Kampus Kuala Lumpur di Jalan Raja Muda Abdul Aziz pada 1998. Sepanjang tempoh berdiri sebagai sebuah jabatan di FKSB, beberapa program pengajian telah ditawarkan seperti Ijazah Sarjana Muda Farmasi dengan Kepujian, Sarjana Farmasi Klinikal, Sarjana Sains Kesihatan dan Doktor Falsafah. Hal ini membuktikan bahawa jabatan ini berkembang dengan mantap, dan graduannya dikatakan antara yang terhebat di negara ini. Melihat kematangan dan kemampuan Jabatan Farmasi yang semakin ke hadapan, selain status program farmasi sebagai sebuah program profesional, UKM mengambil keputusan untuk menaik taraf jabatan ini kepada sebuah fakulti.

The Pharmacy Department was originally located at Jalan Temerloh, Kuala Lumpur, before it relocated to the Kuala Lumpur Campus at Jalan Raja Muda Abdul Aziz in 1998. During its time as a department under FSKB, several academic programmes were offered, namely the Bachelor of Pharmacy (Honours), Master of Clinical Pharmacy, Master of Health Science, and Doctor of Philosophy. This reflects the department's steady growth, with its graduates recognised as among the best in the country. In recognition of its maturity, progress, and the professional status of the pharmacy programme, UKM decided to upgrade the department to a faculty.

Dengan rasminya, Fakulti Farmasi, UKM, ditubuhkan pada 1 Jun 2008. Dengan tertubuhnya sebuah fakulti, Fakulti Farmasi bersedia untuk memenuhi keperluan negara iaitu melahirkan ahli farmasi yang kompetetif, berkualiti dan profesional untuk berkhidmat di sektor awam dan swasta. Kerjaya farmasi merupakan kerjaya yang dianggap kritikal oleh Kementerian Kesihatan Malaysia dan Kementerian Pengajian Tinggi. Fakulti Farmasi bukan sahaja terlibat dalam pengajaran dan pembelajaran tetapi juga dalam penyelidikan, perkhidmatan farmasi dan perundingan serta bekerja rapat dengan fakulti/ institusi yang lain dalam bidang kesihatan. Ketika ini, Fakulti Farmasi menjalankan semua aktiviti utamanya di Kampus Kuala Lumpur (Blok B dan Blok P) dan di Hospital Canselor Tuanku Muhriz (HCTM) yang terletak di Bandar Tun Razak, Cheras.

The Faculty of Pharmacy, UKM, was officially established on 1 June 2008. With its establishment, the faculty set out to meet the nation's needs by producing competitive, high-quality, and professional pharmacists to serve in both the public and private sectors. The pharmacy profession has been recognised as a critical field by the Ministry of Health Malaysia and the Ministry of Higher Education. Beyond teaching and learning, the Faculty of Pharmacy is actively engaged in research, pharmacy services, and consultancy, collaborating closely with other faculties and institutions in the field of health sciences. At present, the faculty conducts all its core activities at the Kuala Lumpur Campus (Block B and Block P) and at the Hospital Canselor Tuanku Muhriz (HCTM) in Bandar Tun Razak, Cheras.

Visi Fakulti (*Faculty's Vision*)

Menerajui pendidikan, penyelidikan, dan perkhidmatan farmasi yang inovatif dan dinamik untuk kesejahteraan insan.

Leading innovative and dynamic pharmacy education, research, and services for the well-being of humanity.

Misi Fakulti (*Faculty's Mision*)

Melahirkan graduan yang holistik dan tersedia masa hadapan melalui pendidikan transformatif, beracuan kebangsaan dan penyelidikan berimpak.

Producing holistic and future-ready graduates through transformative education, national principles and impactful research.

Slogan Fakulti (*Faculty's Slogan*)

Ilmu, Mutu dan Budi.

Knowledge, Quality and Virtue.

Program Pengajian Pascasiswazah

Fakulti Farmasi
Sesi Akademik 2026 - 2027

Program Pengajian Pascasiswazah (Mod Penyelidikan) Fakulti Farmasi

Pengenalan

Penyelidikan dan pembangunan produk yang bercorak multidisiplin merupakan salah satu keutamaan yang sentiasa diberikan penekanan dalam program pengajian secara mod penyelidikan yang ditawarkan di Fakulit Farmasi iaitu Program Sarjana Sains dan Program Doktor Falsafah. Antara topik penyelidikan yang ditawarkan dalam dua program ini terbahagi kepada tiga bidang utama iaitu Kimia Farmaseutikal & Farmakologi, Farmaseutik dan Farmasi Klinikal & Amalan Farmasi.

Objektif Pendidikan Program (OPP) Pengajian Pascasiswazah

1. Program Ijazah Sarjana Sains adalah untuk menghasilkan:

    OPP1 Sarjana yang menguasai pengetahuan lanjutan serta kemahiran praktikal, digital dan numerasi dalam bidang berkaitan farmasi selaras dengan keperluan profesion dan perkembangan industri.

    OPP2 Sarjana yang mempamerkan kemahiran kepimpinan, autonomi, kebertanggungjawaban dan komunikasi berkesan dengan pelbagai pihak berkepentingan.

    OPP3 Sarjana yang memiliki kemahiran pembelajaran sepanjang hayat serta pemikiran keusahawanan dalam menyelesaikan cabaran berkaitan bidang farmasi.

    OPP4 Sarjana yang beretika, berintegriti dan profesional dalam melaksanakan tanggungjawab dalam bidang berkaitan farmasi.

2. Program Ijazah Doktor Falsafah adalah untuk menghasilkan:

    OPP1 Pakar bidang farmasi yang berupaya mensintesis idea baharu dan mengintegrasi pengetahuan serta kemahiran praktikal, digital dan numerasi bagi memperkukuh profesion dan memacu pembangunan industri.

    OPP2 Pakar bidang farmasi yang mempamerkan kepimpinan pemikiran, autonomi profesional, tanggungjawab strategik dan komunikasi berkesan dengan pelbagai pihak berkepentingan.

OPP3 Pakar bidang farmasi yang mengamalkan pembelajaran sepanjang hayat dan pemikiran keusahawanan untuk menjana penyelesaian inovatif dalam menangani cabaran.

OPP4 Pakar bidang farmasi yang beretika, berintegriti dan profesional dalam memimpin penyelidikan.

HASIL PEMBELAJARAN PROGRAM (HPP) SARJANA SAINS DAN DOKTOR FALSAFAH

Sarjana Sains

Program Ijazah Sarjana Sains bertujuan melahirkan graduan yang:

HPP1 Menguasai pengetahuan lanjutan berkaitan bidang farmasi.

HPP2 Menganalisis permasalahan kompleks dalam bidang berkaitan farmasi secara kritikal dan kreatif.

HPP3 Melaksanakan penyelidikan dengan kemahiran praktikal untuk menangani isu dalam bidang berkaitan farmasi.

HPP4 Menunjukkan kerjasama dengan individu dalam komuniti pembelajaran yang pelbagai.

HPP5 Mempamerkan kemahiran berkomunikasi secara berkesan dengan komuniti saintifik dan khalayak umum dalam bidang berkaitan farmasi.

HPP6 Mengaplikasi teknologi digital dan teknik analisis yang sesuai untuk penyelesaian masalah dalam bidang berkaitan farmasi.

HPP7 Menggunakan kemahiran numerik, grafik, dan bantuan visual untuk penyelesaian masalah dalam bidang berkaitan farmasi.

HPP8 Mempamerkan kualiti kepimpinan, intelektual, berpasukan, autonomi dan kebertanggungjawaban dalam pelaksanaan tugasan.

HPP9 Mempamerkan komitmen terhadap pembelajaran sepanjang hayat dan pembangunan diri.

HPP10 Mempamerkan ciri-ciri keusahawanan berkaitan bidang farmasi.

HPP11 Melaksanakan penyelidikan dengan mematuhi amalan undang-undang, etika, profesional dan lestari.

Doktor Falsafah

Program Ijazah Doktor Falsafah bertujuan melahirkan graduan yang:

HPP1 Mengintegrasi pengetahuan lanjutan dan penyelidikan terdahulu untuk menjana penemuan baharu dalam bidang berkaitan farmasi.

HPP2 Mensintesis maklumat bagi penyelesaian masalah kompleks secara kritikal, kreatif dan inovatif dalam bidang berkaitan farmasi.

HPP3 Melaksanakan penyelidikan dengan kemahiran praktikal secara berdikari, teliti dan sistematik dengan pengawasan minimum.

HPP4 Menunjukkan kerjasama dalam pasukan penyelidikan dan komuniti profesional yang pelbagai.

HPP5 Mempamerkan kemahiran berkomunikasi secara efektif mengenai penyelidikan dan penemuan dengan komuniti saintifik dan masyarakat umum.

HPP6 Mengaplikasi teknologi digital dan pendekatan analitik untuk memajukan pengetahuan dalam bidang berkaitan farmasi.

HPP7 Menggunakan kemahiran numerik dan visualisasi data kompleks bagi penyelesaian masalah berkaitan bidang dan penyebaran hasil penyelidikan.

HPP8 Menunjukkan kepimpinan intelektual, kebertanggungjawaban, profesional dan keupayaan membuat keputusan strategik.

HPP9 Mengamalkan pembelajaran sepanjang hayat untuk pengukuhan pengetahuan dan kemahiran profesional.

HPP10 Mengintegrasi pemikiran keusahawanan dalam reka bentuk penyelidikan dan inovasi dalam bidang berkaitan farmasi.

HPP11 Melaksanakan penyelidikan dengan mematuhi amalan undang-undang, etika, profesional dan lestari.

Jenis Pengajian

Sarjana Sains

Program Sarjana Sains yang ditawarkan ini merupakan program kajian penyelidikan yang berkaitan yang mewajibkan penulisan disertasi yang tidak melebihi 60,000 perkataan. Calon wajib mempertahankan disertasi di hadapan Jawatankuasa Pemeriksa dan lulus peperiksaan lisan (viva) serta menenuhi syarat penerbitan bagi pengurniaan Ijazah Sarjana Sains iaitu menerbitkan sekurang-kurangnya SATU (1) manuskrip dalam jurnal berindeks WoS atau Scopus.

Bagi pengajian sepenuh masa, tempoh lazim ialah dua (2) tahun dan tempoh maksimum ialah tiga (3) tahun; bagi pengajian separuh masa, tempoh lazim ialah tiga (3) tahun dan tempoh maksimum ialah empat (4) tahun.

Doktor Falsafah

Program Doktor Falsafah yang ditawarkan ini merupakan program kajian penyelidikan yang berkaitan yang mewajibkan penulisan tesis yang tidak melebihi 100,000 perkataan. Calon wajib mempertahankan tesis di hadapan Jawatankuasa Pemeriksa dan lulus peperiksaan lisan (viva) serta menenuhi syarat penerbitan bagi pengurniaan Ijazah Doktor Falsasah iaitu menerbitkan sekurang-kurangnya DUA (2) manuskrip dalam jurnal berindeks WoS atau Scopus.

Bagi pengajian sepenuh masa, tempoh lazim ialah tiga (3) tahun dan tempoh maksimum adalah enam (6) tahun; bagi pengajian separuh masa, tempoh lazim adalah empat (4) tahun dan tempoh maksimum adalah tujuh (7) tahun.

Tambah masa dan penangguhan pengajian

Pelajar boleh membuat permohonan tambah masa pengajian secara bertulis kepada Dekan sehingga tiga (3) semester sebelum mencapai tempoh maksimum pengajian. Permohonan tambah masa bagi semester keempat perlu diluluskan oleh Senat.

Pelajar juga boleh memohon untuk menangguhkan pengajian berdasarkan sebab yang munasabah dan tempoh penangguhan ini tidak akan diambil kira sebagai sebahagian daripada tempoh pengajian yang ditetapkan.

Penangguhan pengajian boleh dibenarkan untuk tempoh minimum satu (1) semester dan tidak melebihi empat (4) semester sepanjang tempoh pengajian kecuali atas faktor kesihatan.

Kursus Wajib Universiti

(a) Untuk calon luar negara yang tidak mempunyai pengetahuan dan kemahiran asas dalam Bahasa Melayu atau Bahasa Melayu bukan bahasa utama negara pelajar (bahasa kebangsaan atau bahasa rasmi):

Kod	**Tajuk Kursus**	**Unit**
LMCM1083	Bahasa Melayu Komunikasi Antarabangsa	3

(b) Untuk calon dari Singapura, Brunei Darussalam, Indonesia dan Thailand bahagian Selatan:

Kod	**Tajuk Kursus**	**Unit**
LMCM1093	Bahasa Melayu Untuk Pelajar Nusantara	3

Kursus Wajib Fakulti

Kod	**Tajuk Kursus***	**Unit**
NFNP6013	Kaedah Penyelidikan dan Inovasi	3
NFNP7013	Pengurusan Penyelidikan, Inovasi dan Pengkomersilan	3

**Pelajar hanya perlu mendaftar satu kursus sahaja. Pelajar Sarjana Sains perlu mendaftar NFNP6013 dan pelajar Kedoktoran perlu mendaftar NFNP7013.*

Sinopsis Kursus Wajib Fakulti

NFNP6013 Kaedah Penyelidikan dan Inovasi
Kursus ini menfokuskan kepada tiga aspek penyelidikan iaitu kaedah penyelidikan, kaedah analisa statistik dan inovasi. Setelah mengikuti kursus ini, pelajar seharusnya mampu melakukan tinjauan literatur, mengaplikasi kaedah penyelidikan secara dan teknik analisis statistik yang bersesuaian, mempunyai pengetahuan berkenaan harta intelek dan pengkomersilan serta berkemahiran untuk mencadangkan penyelidikan berorientasi projek keusahawanan.

Bacaan Asas
Cargill, M. & O'Connor, P.D. 2021. *Writing Scientific Research Articles: Strategy and Steps*. John Wiley & Sons.
Herman, A. 2025. *Research Methodology: Best Practices for Rigorous, Credible, and Impactful Research*. India: Sage.
Lebrun, J.L. & Lebrun, J. 2021. *Scientific writing 3.0: A Reader and Writer's Guide*. World Scientific.
Panduan Penulisan Tesis Gaya UKM. Edisi Ke-3 2015. Bangi: Pusat Siswazah, Universiti Kebangsaan Malaysia.
Rossi, R.J. 2022. *Applied Biostatistics for the Health Sciences*. Edisi ke-2. Wiley: Hoboken, NJ.

NFNP7013 Pengurusan Penyelidikan, Inovasi dan Pengkomersilan
Kursus ini memfokuskan kepada tiga aspek penyelidikan iaitu pengurusan penyelidikan, inovasi dan pengkomersilan. Setelah mengikuti kursus ini, pelajar seharusnya mampu menghasilkan artikel ulasan, mengaplikasi kaedah penyelidikan dan teknik analisis statistik yang bersesuaian, melalui proses pendaftaran harta intelek dan memahami produk komersil berasaskan penyelidikan serta berkemahiran untuk mencadangkan penyelidikan berorientasi projek keusahawanan.

Bacaan Asas
Cargill, M. & O'Connor, P.D. 2021. *Writing Scientific Research Articles: Strategy and Steps*. John Wiley & Sons.
Herman, A. 2025. *Research Methodology: Best Practices for Rigorous, Credible, and Impactful Research*. India: Sage.
Lebrun, J.L. & Lebrun, J., 2021. *Scientific writing 3.0: A Reader and Writer's Guide*. World Scientific.
Panduan Penulisan Tesis Gaya UKM. Edisi ke-3 2015. Bangi: Pusat Siswazah, Universiti Kebangsaan Malaysia.
Rossi, R.J. 2022. *Applied Biostatistics for the Health Sciences*. Edisi ke-2. Wiley: Hoboken, NJ.

Topik Penyelidikan Sarjana Sains dan Doktor Falsafah

Kimia Farmaseutikal & Farmakologi
- Kajian fitokimia
- Kajian farmakognosi
- Pembangunan produk herba daripada hasilan semula jadi
- Sintesis terbitan bioaktif novel
- Analisis herba
- Kajian farmakologi dan toksikologi
- Analisis farmaseutikal dan kawalan kualiti
- Kajian tingkah laku model haiwan
- Neurogastroimunologi
- Kajian kardiovaskular dan serebrovaskular
- Kajian kesihatan tulang
- Kajian kanser

Farmaseutik
- Penyampaian dadah transdermal dan topikal
- Bentuk dos pepejal
- Penyampaian protein dan gen
- Sediaan ubat suntikan dan steril
- Penyampaian dadah kolon
- Sintesis polimer untuk penyampaian dan sasaran dadah
- Pembangunan vaksin
- Sistem penghantaran dadah novel
- Nanoperubatan

Farmasi Klinikal & Amalan Farmasi
- Farmakoterapeutik
- Farmakokinetik klinikal
- Farmakogenomik
- Keselamatan ubat
- Maklumat dan literasi ubat
- Kepatuhan ubat
- Kompetensi ahli farmasi
- Pendidikan farmasi
- Dadah dalam sukan

Penukaran daripada Program Sarjana ke Program Kedoktoran

Syarat dan tatacara permohonan ini juga merujuk kepada Perkara 19 Kaedah-Kaedah Universiti Kebangsaan Malaysia (Pengajian Pascasiswazah) 2026.

1) Pelajar yang mengikuti program sarjana dengan mod pengajian di bawah perenggan 3(1)*(a)* Peraturan boleh memohon penukaran dari program sarjana ke program kedoktoran secara bertulis kepada Dekan Fakulti dengan syarat:

    a) disertakan bersama perakuan Penyelia Utama atau Pengerusi Jawatankuasa Penyeliaan; dan

    b) dalam tempoh selewat-lewatnya dalam semester kedua untuk pelajar sepenuh masa dan semester keempat untuk pelajar separuh masa.

2) Bagi tujuan menilai permohonan pelajar untuk penukaran daripada program sarjana ke program kedoktoran, suatu jawatankuasa penilai hendaklah ditubuhkan.

3) Keanggotaan jawatankuasa penilai hendaklah terdiri daripada:

    a) Dekan Fakulti atau wakilnya sebagai pengerusi;

    b) Ketua Jabatan atau Pengerusi Pusat Pengajian atau wakilnya;

    c) tiga orang kakitangan akademik dalam bidang berkaitan yang terdiri daripada Profesor atau Profesor Madya;

    d) Penyelia Utama atau Pengerusi Jawatankuasa Penyeliaan; dan

    e) seorang setiausaha.

4) Jawatankuasa penilai bertanggungjawab seperti yang berikut:

    a) Menilai cadangan penyelidikan dan pencapaian pelajar dalam sesi pembentangan berdasarkan kriteria yang ditetapkan oleh Fakulti dan sekiranya pelajar layak, jawatankuasa boleh memperakukan permohonan penukaran daripada program sarjana kepada program kedoktoran;

b) Memaklumkan secara bertulis tentang kelulusan penukaran program pengajian pelajar kepada PTj Pengurus Akademik sebelum tamat semester ketiga bagi pelajar sepenuh masa dan semester kelima bagi pelajar separuh masa; dan,

c) Menetapkan tempoh pengajian bagi pelajar yang membuat pertukaran dari program sarjana kepada program kedoktoran dikira dari tarikh pendaftaran program sarjana.

5) Keputusan jawatankuasa adalah muktamad dan tidak boleh dirayu.

Penerbitan Manuskrip oleh Pelajar Pascasiswazah untuk Menduduki Peperiksaan Lisan dan Penganugerahan Ijazah

Syarat ini juga merujuk kepada Perkara 25 Peraturan-Peraturan Universiti Kebangsaan Malaysia (Pengajian Pascasiswazah) 2026.

1. Semua pelajar wajib memenuhi syarat penerbitan bagi memenuhi syarat penghantaran disertasi atau tesis untuk pemeriksaan seperti berikut:

    a. Program Sarjana Sains
    – Satu (1) artikel jurnal berindeks WoS atau Scopus.

    b. Program Doktor Falsafah
    – Dua (2) artikel jurnal berindeks WoS atau Scopus.

2. Semasa penyerahan disertasi atau tesis untuk pemeriksaan, pelajar perlu:

    a. Mengisi Borang Penyerahan Disertasi/Tesis untuk pemeriksaan;

    b. Menjelaskan yuran pemeriksaan disertasi atau tesis; dan

    c. Melampirkan bukti manuskrip telah diterima untuk diterbitkan.

Perkara 37(1)*(d)* Kaedah-Kaedah Universiti Kebangsaan Malaysia (Pengajian Pascasiswazah) 2026

Syarat pengurniaan ijazah
Pelajar di bawah perenggan 3(1)*(a)* Peraturan hendaklah memenuhi syarat lain yang ditetapkan oleh Fakulti.

Pembentangan dan Kehadiran di Seminar Pascasiswazah Fakulti

Syarat ini juga merujuk kepada:
Sebelum menyerahkan disertasi atau tesis untuk pemeriksaan, setiap pelajar pascasiswazah (mod penyelidikan) mesti:

a. membentangkan:

i. cadangan penyelidikan;
ii. laporan kemajuan; dan
iii. laporan akhir penyelidikan.

b. hadir ke Seminar Pascasiswazah.

(Mesyuarat Fakulti Farmasi bertarikh 18 Februari 2013 dan Mesyuarat Khas Fakulti Farmasi bertarikh 25 Julai 2013)

Syarat Lulus Kursus Fakulti dan Universiti

Syarat ini juga merujuk kepada Perkara 37(1)*(d)* dan 37(1)*(e)* Kaedah-Kaedah Universiti Kebangsaan Malaysia (Pengajian Pascasiswazah) 2026.

1. Pihak fakulti menetapkan bahawa pelajar mesti lulus kesemua kursus tersebut bagi pengurniaan ijazah (termasuk kursus Bahasa Melayu bagi pelajar luar negara dan kursus NFNP).

(Mesyuarat Senat 413 bertarikh 27 Ogos 2015)

Program Sarjana Farmasi Klinikal

Pengenalan

Farmasi Klinikal ialah salah satu bidang farmasi yang giat berkembang. Farmasi klinikal merupakan disiplin farmasi yang mengaplikasikan kemahiran klinikal dalam praktis farmasi dan penyampaian penjagaan farmaseutikal. Kursus pascasiswazah ini direka untuk menyediakan ahli farmasi dengan kemahiran penyampaian perkhidmatan farmasi klinikal pada tahap yang tinggi dalam pelbagai bentuk praktis. Kursus-kursus yang ditawarkan akan memberikan pengetahuan dan kemahiran yang khusus dalam praktis farmasi klinikal dan farmakoterapi.

Objektif

Objektif program ini adalah untuk melahirkan:

OPP1 Sarjana yang menguasai pengetahuan lanjutan serta kemahiran farmakoterapi, digital dan numerasi dalam bidang farmasi klinikal selaras dengan keperluan profesion dan perkembangan industri.

OPP2 Sarjana yang mempamerkan kemahiran kepimpinan, autonomi, kebertanggungjawaban dan komunikasi.

OPP3 Sarjana yang memiliki kemahiran pembelajaran sepanjang hayat serta pemikiran keusahawanan dalam menyelesaikan cabaran berkaitan bidang farmasi klinikal.

OPP4 Sarjana yang beretika, berintegriti dan profesional dalam melaksanakan tanggungjawab dalam bidang farmasi klinikal.

Jumlah Unit

Jumlah unit wajib yang ditetapkan bagi program ini ialah 40 unit.

HASIL PEMBELAJARAN PROGRAM (HPP)
SARJANA FARMASI KLINIKAL

Program ini bertujuan melahirkan graduan yang:

HPP1 Menguasai pengetahuan dan pemahaman lanjutan berkaitan bidang farmasi klinikal.

HPP2 Menganalisis permasalahan kompleks dalam bidang farmasi klinikal secara kritikal dan kreatif.

HPP3 Mengaplikasi kemahiran praktikal dalam menangani isu-isu berkaitan bidang farmasi klinikal.

HPP4 Menunjukkan kerjasama dengan individu dalam komuniti pembelajaran dan pekerjaan yang pelbagai dalam persekitaran klinikal.

HPP5 Mempamerkan kemahiran berkomunikasi secara berkesan dengan komuniti saintifik dan khalayak umum dalam bidang farmasi klinikal.

HPP6 Mengaplikasi teknologi digital dan teknik analisis yang sesuai untuk penyelesaian masalah dalam bidang farmasi klinikal.

HPP7 Menggunakan kemahiran numerik dan grafik untuk penyelesaian masalah dalam bidang farmasi klinikal.

HPP8 Mempamerkan kualiti kepimpinan, intelektual, berpasukan, autonomi dan kebertanggungjawaban dalam pelaksanaan tugasan.

HPP9 Mempamerkan komitmen terhadap pembelajaran sepanjang hayat dan pembangunan diri.

HPP10 Mempamerkan ciri-ciri keusahawanan berkaitan dalam amalan farmasi klinikal.

HPP11 Mematuhi amalan undang-undang, etika, profesional dan lestari.

Kurikulum Program Sarjana Farmasi Klinikal

Secara Sepenuh Masa:

Tempoh lazim bagi pengajian sepenuh masa ialah satu (1) tahun atau dua (2) semester. Senarai kursus yang ditawarkan bagi setiap semester adalah seperti berikut:

Semester I

Kod	**Tajuk Kursus (Kursus Teori & Penyelidikan)**	**Unit**
NFNK6312	Farmakoterapeutik Lanjutan I	2
NFNK6332	Kaedah Penyelidikan dan Biostatistik	2
NFNK6352	Amalan Farmasi Klinikal Lanjutan	2
NFNK6372	Pengenalan Kepada Klerksyip Dan Pengurusan Kes Klinikal	2
NFNK6392	Projek Penyelidikan Klinikal I	2
	Jumlah kredit	**10**

Kod	**Tajuk Kursus (Klerksyip Wajib)***	**Unit**
	**Nota: Pilih dua kursus klerksyip*	
NFNK6413	Klerksyip Farmakoterapi Dalam Perubatan Dalaman I	3
NFNK6423	Klerksyip Farmakoterapi Dalam Perubatan Dalaman II	3
NFNK6433	Klerksyip Farmakoterapi Dalam Jagaan Kritikal	3
NFNK6443	Klerksyip Farmakoterapi Dalam Pediatrik	3
	Jumlah kredit	**6**

Kod	**Tajuk Kursus (Klerksyip Elektif)***	**Unit**
	**Nota: Pilih satu kursus klerksyip*	
NFNK6512	Klerksyip Farmakoterapi Dalam Obstetrik Dan Ginekologi	2
		2
NFNK6522	Klerksyip Farmakoterapi Dalam Psikiatri	2
NFNK6532	Klerksyip Farmakokinetik Klinikal	2
NFNK6542	Klerksyip Farmakoterapi Dalam Onkologi Dan Farmasi Nuklear	
NFNK6552	Klerksyip Farmakoterapi dalam Surgeri dan Pemakanan Parenteral	2
		2
NFNK6562	Klerksyip Perkhidmatan Maklumat Ubat	2
NFNK6572	Klerksyip Pemantauan Pengurusan Ubat Pesakit	
	Jumlah kredit	**2**

Jumlah kredit untuk Semester I = 18 unit

Secara Sepenuh Masa:

Semester II

Kod	Tajuk Kursus (Kursus Teori & Penyelidikan)	Unit
NFNK6322	Farmakoterapeutik Lanjutan II	2
NFNK6342	Farmakoterapeutik Lanjutan III	2
NFNK6362	Farmakoterapi Individu	2
NFNK6382	Amalan Klinikal Dalam Farmasi Komuniti	2
NFNK6326	Projek Penyelidikan Klinikal II	6
	Jumlah kredit	**14**

Kod	Tajuk Kursus (Klerksyip Wajib)	Unit
	**Nota: Pilih dua kursus klerksyip*	
NFNK6413	Klerksyip Farmakoterapi Dalam Perubatan Dalaman I	3
NFNK6423	Klerksyip Farmakoterapi Dalam Perubatan Dalaman II	3
NFNK6433	Klerksyip Farmakoterapi Dalam Jagaan Kritikal	3
NFNK6443	Klerksyip Farmakoterapi Dalam Pediatrik	3
	Jumlah kredit	**6**

Kod	Tajuk Kursus (Klerksyip Elektif)	Unit
	**Nota: Pilih satu kursus klerksyip*	
NFNK6512	Klerksyip Farmakoterapi Dalam Obstetrik Dan Ginekologi	2
NFNK6522	Klerksyip Farmakoterapi Dalam Psikiatri	2
NFNK6532	Klerksyip Farmakokinetik Klinikal	2
NFNK6542	Klerksyip Farmakoterapi Dalam Onkologi Dan Farmasi Nuklear	2
NFNK6552	Klerksyip Farmakoterapi dalam Surgeri dan Pemakanan Parenteral	2
NFNK6562	Klerksyip Perkhidmatan Maklumat Ubat	2
NFNK6572	Klerksyip Pemantauan Pengurusan Ubat Pesakit	2
	Jumlah kredit	**2**

Jumlah kredit Semester II = 22 unit

JUMLAH KREDIT KESELURUHAN = 40 UNIT

Secara Separuh Masa:

Tempoh lazim bagi pengajian separuh masa ialah dua (2) tahun atau empat (4) semester. Dalam setiap semester, pelajar separuh masa dibenarkan mendaftar tidak lebih daripada:
(i) dua belas (12) kredit, ATAU
(ii) tiga (3) kursus

Cadangan pendaftaran kursus dalam <u>tahun pertama:</u>

<u>Semester I</u>	
Kursus teori × 3	6 unit
Klerksyip wajib × 1	3 unit
Jumlah kredit	**9 unit**

<u>Semester II</u>	
Kursus teori × 3	6 unit
Klerksyip wajib × 1	3 unit
Klerksyip elektif × 1	2 unit
Jumlah kredit	**11 unit**

Jumlah kredit Tahun I = 20 unit

Cadangan pendaftaran kursus dalam <u>tahun kedua:</u>

<u>Semester I</u>	
Kursus teori × 1	2 unts
Klerksyip wajib × 1	3 unit
Klerksyip elektif × 1	2 unit
Projek penyelidikan I	2 unit
Jumlah kredit	**9 unit**

<u>Semester II</u>	
Kursus Teori × 1	2 units
Klerksyip wajib × 1	3 units
Projek penyelidikan II	6 units
Jumlah kredit	**11 unit**

Jumlah kredit Tahun II = 20 unit

JUMLAH KREDIT KESELURUHAN = 40 UNIT

Kursus Wajib Universiti

(a) Untuk calon luar negara yang tidak mempunyai pengetahuan dan kemahiran asas dalam Bahasa Melayu atau Bahasa Melayu bukan bahasa utama negara pelajar (bahasa kebangsaan atau bahasa rasmi):

Kod	**Tajuk Kursus**	**Unit**
LMCM1083	Bahasa Melayu Komunikasi Antarabangsa	3

(b) Untuk calon dari Singapura, Brunei Darussalam, Indonesia dan Thailand bahagian Selatan:

Kod	**Tajuk Kursus**	**Unit**
LMCM1093	Bahasa Melayu Untuk Pelajar Nusantara	3

Sinopsis Kursus Program Sarjana Farmasi Klinikal

Kursus Teras Program (Teori)

NFNK6312 Farmakoterapeutik Lanjutan I

Kursus ini mengandungi kuliah dan pembelajaran berasaskan masalah. Pelajar akan dilatih dalam pengurusan penyakit yang berkaitan dari segi proses patofisiologi/patogenesis, tanda-tanda dan simptom-simptom klinikal, rawatan farmakoterapi berasaskan bukti terkini, pemilihan rawatan terindividu, kaedah-kaedah pemantauan keberkesanan rawatan dan kesan sampingan /mudarat ubat berkaitan, dan pengurusan bukan farmakologi. Bidang farmakoterapi yang terkandung dalam kursus ini adalah kardiologi, respiratori, nefrologi dan neurologi.

Bacaan Asas

Chisholm-Burns, M.A., et al. 2026. *Pharmacotherapy Principles & Practice*. Edisi ke-7. New York: McGraw-Hill.

DiPiro, J.T., et al. 2023. *DiPiro's Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. New York: McGraw-Hill.

Stoner, N., Mitchell, M. & Dunsmure, L. 2025. *Oxford Handbook of Clinical Pharmacy*. Edisi ke-4. Oxford: Oxford University Press.

Whittlesea, C. & Hodson, K. 2026. *Clinical Pharmacy and Therapeutics*. Edisi ke-7. Edinburgh: Elsevier.

Zeind, C.S., et al. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. Edisi ke-12. Philadelphia: Wolters Kluwer.

NFNK6322 Farmakoterapeutik Lanjutan II

Kursus ini mengandungi kuliah dan pembelajaran berasaskan masalah. Pelajar akan dilatih dalam pengurusan penyakit yang berkaitan dari segi proses patofisiologi/ patogenesis, tanda-tanda dan simptom-simptom klinikal, rawatan farmakoterapi berasaskan bukti terkini, pemilihan rawatan terindividu, kaedah-kaedah pemantauan keberkesanan rawatan dan kesan sampingan /mudarat ubat berkaitan, dan pengurusan bukan farmakologi. Bidang farmakoterapi yang terkandung dalam kursus ini adalah endokrinologi, pengurusan luka, gastroenterologi, obstetrik dan ginekologi, dermatologi, farmasi nuklear dan reumatologi.

Bacaan Asas

Arcangelo, V.P., Peterson, A.M., Wilbur, V.F., & Reinhold, J.A. 2022. *Pharmacotherapeutics for Advanced Practice: A Practical Approach*. Edisi ke-5. Philadelphia: Wolters Kluwer.

Chisholm-Burns, M.A., Schwinghammer, T.L., Malone, P.M., Kolesar, J.M., Lee, K.C., & Bookstaver, P.B. 2022. *Pharmacotherapy Principles & Practice*. New York: McGraw Hill.

DiPiro, J.T., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L., & Posey, L.M. 2023. *DiPiro's Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. New York: McGraw Hill.

Schwinghammer, T.L., Koehler, J.M., & Borchert, J.S. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill Education.

Zeind, C.S., Carvalho, M.G., Cheng, J.W.M., Zaiken, K., & LaPointe, T. 2024. A*pplied Therapeutics: The Clinical Use of Drugs*. Edisi ke-12. Philadelphia: Wolters Kluwer Health.

NFNK6332 Kaedah Penyelidikan dan Biostatistik

Kursus ini mengandungi sesi kuliah dan bengkel. Pelajar akan didedahkan kepada prinsip-prinsip epidemiologi, pembangunan metodologi penyelidikan yang merangkumi pelbagai jenis reka bentuk kajian, jenis-jenis kaedah pensampelan dan bias, dan statistik yang merangkumi jenis- jenis data, penentuan saiz sampel dan kuasa kajian, jenis-jenis analisis statistik dan pemilihan analisis statistik yang bersesuaian dengan kajian.

Bacaan Asas

Aguinis, H., 2025. *Research Methodology: Best Practices for Rigorous, Credible and Impactful Research*. California: Sage Publications Inc.

Creswell, J.W. & Guetterman, T.C. 2025. *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. Edisi ke-7. Harlow, Essex: Pearson Education Limited.

Fabricant, P.D. 2024. *Practical Clinical Research Design and Application: A Primer for Physicians, Surgeons, and Clinical Healthcare Professionals*. Cham: Springer.

Johnson, R.B. & Christensen, L.B. 2025. *Educational Research: Quantitative, Qualitative, and Mixed Approaches*. Edisi ke-8. Thousand Oaks, California: Sage Publications Inc.

Rossi, R.J. 2022. *Applied Biostatistics for the Health Sciences*. Edisi ke-2. Hoboken, NJ: Wiley.

NFNK6342 Farmakoterapeutik Lanjutan III

Kursus ini mengandungi kuliah dan pembelajaran berasaskan masalah. Pelajar akan dilatih dalam pengurusan penyakit yang berkaitan dari segi proses patofisiologi/patogenesis, tanda-tanda dan simptom-simptom klinikal, rawatan farmakoterapi berasaskan bukti terkini, pemilihan rawatan terindividu, kaedah-kaedah pemantauan keberkesanan rawatan dan kesan sampingan /mudarat ubat berkaitan, dan pengurusan bukan farmakologi. Bidang farmakoterapi yang terkandung dalam kursus ini adalah penyakit berjangkit, imunologi dan onkologi.

Bacaan Asas

Chisholm-Burns, M.A., Schwinghammer, T., Malone, P., Kolesar, J., Lee, K.C. & Bookstaver, P.B. 2025. *Pharmacotherapy Principles & Practice*. Edisi ke-7. New York: McGraw-Hill Medical.

DiPiro, J.T., Schwinghammer, T.L., Ellingrod, V. & Holle, L.M. 2026. *DiPiro's Pharmacotherapy Handbook*. Edisi ke-13. New York: McGraw-Hill Education.

Haines, S.T., Nolin, T.D., Ellingrod, V.L., Cocohoba, J., Holle, L.M. & Posey, L.M. 2026. *DiPiro's Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-13. New York: McGraw-Hill Medical.

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill Medical.

Zeind, C.S., Carvalho, M.G., Cheng, J.W.M., Zaiken, K. & LaPointe, T. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. Edisi ke-12. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.

NFNK6352 Amalan Farmasi Klinikal Lanjutan

Dalam kursus ini, pelajar akan dilatih untuk mengaplikasikan konsep farmasi klinikal dan kemahiran amalan farmasi lanjutan. Perbincangan juga meliputi aplikasi konsep penjagaan farmaseutikal dalam perkhidmatan-perkhidmatan farmasi terkhusus, kemahiran komunikasi dan pengurusan maklumat ubat dan racun.

Bacaan Asas

da Costa, F.A., Foppe can Mil, J.W. & Alvarez-Risco, A. 2018. *The Pharmacist Guide to Implementing Pharmaceutical Care*. Springer. (Rujukan Utama)

DiPiro, J.T., Yee, G.C. & Posey, L.M. 2019. *Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-11. New York: McGraw-Hill Medical. (Rujukan Utama)

Tietze, K.J. 2012. *Clinical Skills for Pharmacists: A Patient-Focused Approach*. Edisi ke-3. Elsevier. (Rujukan Utama)

Walker, R. & Whittlesea, C. 2018. *Clinical Pharmacy and Therapeutics*. Edisi ke-6. Edinburgh: Churchill Livingstone/Elsevier. (Rujukan Utama)

Warholak, T.L. & Nau, D.P. 2010. *Quality and Safety in Pharmacy Practice*. New York: McGraw-Hill Medical. (Rujukan Utama)

NFNK6362 Farmakoterapi Individu

Kursus ini mengandungi kuliah dan pembelajaran berasaskan masalah. Pelajar akan dilatih untuk menguasai konsep farmakokinetik dan farmakodinamik klinikal terkini dan mengaplikasikan dalam penjagaan farmaseutikal. Pelajar akan dilatihkan dalam pengurusan penyakit pesakit secara individu untuk mengoptimumkan kesan rawatan. Proses penyampaian perkhidmatan dibincangkan dari segi penilaian status klinikal pesakit, pemilihan ubat dan sasaran kepekatan ubat plasma/serum, merekabentuk regimen dos, mentafsir kepekatan ubat di dalam plasma/serum, proses pengubahsuaian dos dan cadangan regimen rawatan.

Bacaan Asas

Amponsah, S.K. & Pathak, Y.V. (pnyt.) 2022. *Recent Advances in Therapeutic Drug Monitoring and Clinical Toxicology*. Cham: Springer.

Beringer, P.M. 2019. *Winter's Basic Clinical Pharmacokinetics*. Edisi ke-6. Philadelphia: Wolters Kluwer. (Rujukan Utama)

Curry, S.H. & Whelpton, R. 2022. *Drug Disposition and Pharmacokinetics: From Principles to Applications*. Edisi ke-2. Hoboken, NJ: John Wiley & Sons.

Dasgupta, A. (pnyt.) 2024. *Therapeutic Drug Monitoring: Newer Drugs and Biomarkers*. Edisi ke-2. London: Academic Press/Elsevier.

Murphy, J.E. 2021. *Clinical Pharmacokinetics*. Edisi ke-7. Bethesda, MD: American Society of Health-System Pharmacists.

NFNK6372 Pengenalan Kepada Klerksyip dan Pengurusan Kes Klinikal

Kursus ini melatih pelajar dalam proses klerksyip yang sistematik dan pengurusan kes klinikal yang berkesan. Topik-topik yang dibincangkan merangkumi etika dan imej profesional, hubungan profesional ahli farmasi klinikal bersama pesakit dan ahli profesional kesihatan lain, kepelbagaian data makmal dan klinikal, kutipan data klinikal dan pengubatan, dokumentasi kes klinikal, aplikasi amalan berasaskan bukti dan nilai dalam rawatan ubat pesakit, perancangan terapi ubat dan pemantauannya, keperluan pendidikan pesakit, dan pendekatan klinikal untuk populasi khusus seperti jagaan rapi, pediatrik, obstetrik dan ginekologi (O&G).

Bacaan Asas

Brown, T. & Shah, S. 2013. *Evidence-Based Clinical Reasoning in Medicine*. Shelton: People's Medical Pub. House-USA. (Rujukan Utama)

Chisholm-Burns, M.A., et al. 2022. *Pharmacotherapy Principles & Practice*. Edisi ke-6. New York: McGraw-Hill Medical.

DiPiro, J.T., Yee, G.C. & Posey, L.M. 2023. *Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. New York: McGraw-Hill Medical.

Pagano, M.P. 2016. *Health Communication for Health Care Professionals: An Applied Approach*. New York: Publisher Springer Publishing Co Inc. (Rujukan Utama)

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill Medical.

NFNK6382 Amalan Klinikal Dalam Farmasi Komuniti

Pelajar akan dilatih bagi mengintegrasikan konsep farmasi klinikal dalam amalan farmasi komuniti. Perbincangan juga meliputi aplikasi konsep penjagaan farmaseutikal dalam perkhidmatan farmasi komuniti, kemahiran kaunseling, penyakit minor yang memerlukan konsultasi ahli farmasi dan pengurusan farmasi komuniti secara am.

Bacaan Asas

Beardsley, R.S., Skrabal, M.Z. & Kimberlin, C.L. 2020. *Communication Skills in Pharmacy Practice*. Edisi ke-7. Philadephia: Lippincott Williams & Wilkins. (Rujukan Utama)

da Costa, F.A., van Mil, J.W.F. & Alvarez-Risco, A. 2019. *The Pharmacist Guide to Implementing Pharmaceutical Care*. Switzerland: Springer. (Rujukan Utama)

Pharmaceutical Services Division, Ministry of Health Malaysia. 2015. *Community Pharmacy Benchmarking Guideline*. Edisi ke-2. Malaysia. (Rujukan Utama)

Rutter, P. 2026. *Community Pharmacy: Symptoms, Diagnosis and Treatment*. Edisi ke-4. London: Elsevier

Schommer, J.C. & Olson, A.W. 2019. *Pharmacist Services*. Switzerland: MDPI. (Rujukan Utama)

Kursus Teras Program (Penyelidikan)

NFNK6392 Projek Penyelidikan Klinikal I

Projek Penyelidikan Klinikal I meliputi pencarian literatur, penyediaan dan pembentangan proposal penyelidikan, kajian rintis dan kutipan data awal. Tajuk-tajuk penyelidikan seharusnya mencakupi bidang praktis farmasi klinikal atau farmakoterapi. Hasil kajian diharap dapat memperbaiki amalan farmasi atau kaedah rawatan ubat semasa. Pelajar akan diselia oleh pensyarah yang dilantik.

NFNK6326 Projek Penyelidikan Klinikal II

Projek Penyelidikan Klinikal II meliputi pencarian literatur, pengumpulan data, analisis data, penulisan disertasi, pembentangan hasil kajian dan peperiksaan lisan. Tajuk-tajuk penyelidikan seharusnya mencakupi bidang praktis farmasi klinikal atau farmakoterapi. Hasil kajian diharap dapat memperbaiki amalan farmasi atau kaedah rawatan ubat semasa. Pelajar akan diselia oleh pensyarah yang dilantik. Pelajar juga perlu menghasilkan manuskrip untuk tujuan penerbitan.

Bacaan Asas

Gaya UKM 2015. https://www.ukm.my/pusatsiswazah/wp-content/uploads/2021/02/2015-GayaUKM-BI-Final.pdf (Rujukan Utama)

Greenhalgh, T. & Dijkstra, P. 2014. *How to Read a Paper: The Basics of Evidence-Based Medicine and Healthcare*. Edisi ke-5. West Sussex: Wiley-Blackwell/BMJ Books. (Rujukan Utama)

von Elm, E., et al. 2007. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *BMJ* 335: 806. https://www.strobe-statement.org/checklists/ (Rujukan Utama)

Walliman, N. 2020. *Your Research Project. Designing and Planning Your Work*. Edisi ke-4. Sage Publications. (Rujukan Utama)

Jurnal-jurnal semasa dan garis panduan klinikal yang berkaitan dengan bidang penyelidikan.

Kursus Teras Program (Klerksyip Wajib)

NFNK6413 Klerksyip Farmakoterapi Dalam Perubatan Dalaman I

Kursus ini mengandungi sesi rondaan wad, pengajaran tepi-katil, perbincangan dan pembentangan kes klinikal. Pelajar akan dilatihkan dalam pengurusan farmakoterapi untuk pesakit-pesakit di dalam wad. Pengetahuan teori baharu dan dari pencarian literatur terkini akan diaplikasikan dalam pengurusan pesakit secara berasaskan bukti. Pelajar juga akan dilatih untuk mengenalpasti dan menguruskan isu-isu penjagaan farmaseutikal yang berpotensi atau sebenarnya telah berlaku. Selain itu, kemahiran membentang kes-kes klinikal secara lisan dan penulisan juga akan dilatih. Kes klinikal yang dipilih akan meliputi masalah berkaitan kardiovaskular, endokrin, dermatologi, muskuloskeletal dan respiratori.

Bacaan Asas

Chisholm-Burns, M.A., et al. 2026. *Pharmacotherapy Principles & Practice*. Edisi ke-7. New York: McGraw-Hill.

Matthias, K.R., et al. 2023. *Pharmacotherapy Principles and Practice Study Guide: A Case-Based Care Plan Approach*. Edisi ke-6. New York: McGraw-Hill.

Schwinghammer, T.L., et al. 2023. *Schwinghammer's Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill

Stoner, N., Mitchell, M. & Dunsmure, L. 2025. *Oxford Handbook of Clinical Pharmacy*. Edisi ke-4. Oxford: Oxford University Press.

Whittlesea, C. & Hodson, K. 2026. *Clinical Pharmacy and Therapeutics*. Edisi ke-7. Edinburgh: Elsevier.

Jurnal-jurnal terkini – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

NFNK6423 Klerksyip Farmakoterapi Dalam Perubatan Dalaman II

Kursus ini mengandungi sesi rondaan wad, pengajaran tepi-katil, perbincangan dan pembentangan kes klinikal. Pelajar akan dilatihkan dalam pengurusan farmakoterapi untuk pesakit-pesakit di dalam wad. Pengetahuan teori baharu dan dari pencarian literatur terkini akan diaplikasikan dalam pengurusan pesakit secara berasaskan bukti. Pelajar juga akan dilatih untuk mengenalpasti dan menguruskan isu-isu penjagaan farmaseutikal yang berpotensi atau sebenarnya telah berlaku. Selain itu, kemahiran membentang kes-kes klinikal secara lisan dan penulisan juga akan dilatih. Kes klinikal yang dipilih akan meliputi masalah berkaitan renal, gastrointestin, jangkitan, hematologi, dan neurologi.

Bacaan Asas

DiPiro, J.T., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, B.G. & Posey L. 2023. *Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. USA: McGraw-Hill Education.

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill Medical.

Whittlesea, C. & Hodson, K. 2019. *Clinical Pharmacy and Therapeutics*. Edisi ke-6. Oxford: Elsevier. (Rujukan Utama)

Zeind, C.S. & Carvalho, M.G. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. Edisi ke-12. Vancouver: Applied Therapeutics.

Jurnal-jurnal terkini – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

NFNK6433 Klerksyip Farmakoterapi Dalam Jagaan Kritikal

Kursus ini mengandungi sesi rondaan wad, pengajaran tepi-katil, perbincangan dan pembentangan kes klinikal. Pelajar akan dilatihkan dalam pengurusan farmakoterapi untuk pesakit-pesakit di dalam wad. Pengetahuan teori baharu dan dari pencarian literatur terkini akan diaplikasikan dalam pengurusan pesakit secara berasaskan bukti. Pelajar juga akan dilatih untuk mengenalpasti dan menguruskan isu-isu penjagaan farmaseutikal yang berpotensi atau sebenarnya telah berlaku. Selain itu, kemahiran membentang kes-kes klinikal secara lisan dan penulisan juga akan dilatih. Kes klinikal yang dipilih akan meliputi masalah berkaitan jangkitan, renjatan, kegagalan organ akut, sedasi dan pembiusan.

Bacaan Asas

Chisholm-Burns, M.A., Schwinghammer, T.L., Malone, P.M., Kolesar, J.M., Lee, K.C. & Bookstaver, P.B. 2022. *Pharmacotherapy Principles & Practice*. New York: McGraw Hill.

DiPiro, J.T., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L. & Posey, L.M. 2023. *Dipiro's Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. New York: McGraw Hill.

Heiner, J.S., Gabot, M. & Elisha, S. 2025. *Emergency Management in Anesthesia and Critical Care*. St. Louis, Missouri: Elsevier.

Schwinghammer, T.L., Koehler, J.M. & Borchert, J.S. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill Education.

Vincent, J.L. et al. 2024. *Textbook of Critical Care*. Edisi ke-8. Netherlands: Elsevier.

NFNK6443 Klerksyip Farmakoterapi Dalam Pediatrik

Kursus ini mengandungi sesi rondaan wad, pengajaran tepi-katil, perbincangan dan pembentangan kes klinikal. Pelajar akan dilatihkan dalam pengurusan farmakoterapi untuk pesakit-pesakit di dalam wad. Pengetahuan teori baharu dan dari pencarian literatur terkini akan diaplikasikan dalam pengurusan pesakit secara berasaskan bukti. Pelajar juga akan dilatih untuk mengenalpasti dan menguruskan isu-isu penjagaan farmaseutikal yang berpotensi atau sebenarnya telah berlaku. Selain itu, kemahiran membentang kes-kes klinikal (secara lisan dan penulisan) juga akan dilatih. Kes klinikal yang dipilih akan meliputi masalah berkaitan perubatan dalaman dalam neonat, infan dan kanak-kanak.

Bacaan Asas

DiPiro, J.T., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, B.G. & Posey, L.M. 2023. *Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. USA: McGraw-Hill Education.

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill Medical.

Whittlesea, C. & Hodson, K. 2019. *Clinical Pharmacy and Therapeutics*. Edisi ke-6. Oxford: Elsevier. (Rujukan Utama)

Zeind, C.S. & Carvalho, M.G. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. Edisi ke-12. Vancouver: Applied Therapeutics.

Jurnal-jurnal terkini – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

Kursus Elektif Program (Klerksyip Elektif)

NFNK6512 Klerksyip Farmakoterapi dalam Obstetrik dan Ginekologi

Kursus ini mengandungi sesi rondaan wad, pengajaran tepi-katil, perbincangan dan pembentangan kes klinikal. Pelajar akan dilatihkan dalam pengurusan farmakoterapi untuk pesakit-pesakit di dalam wad. Pengetahuan teori baharu dan dari pencarian literatur terkini akan diaplikasikan dalam pengurusan pesakit secara berasaskan bukti. Pelajar juga akan dilatih untuk mengenalpasti dan menguruskan isu-isu penjagaan farmaseutikal yang berpotensi atau sebenarnya telah berlaku. Selain itu, kemahiran membentang kes-kes klinikal secara lisan dan penulisan juga akan dilatih. Kes klinikal yang dipilih akan meliputi isu berkaitan dengan bidang obstetrik dan ginekologi.

Bacaan Asas

Mattison, D.R. & Halbert, L.A. (pnyt.) 2022. *Clinical Pharmacology During Pregnancy*. Edisi ke-2. London: Academic Press/Elsevier.

O'Connell, M.B., Smith, J.A. & Borgelt, L.M. (pnyt.) 2023. *Women's Health Across the Lifespan: A Pharmacotherapeutic Approach*. Edisi ke-3. New York: McGraw-Hill.

Stoner, N., Mitchell, M. & Dunsmure, L. 2025. *Oxford Handbook of Clinical Pharmacy*. Edisi ke-4. Oxford: Oxford University Press.

Towers, C.V., Forinash, A.B., Brusseau, C.A. & Briggs, G.G. 2026. *Briggs Drugs in Pregnancy and Lactation: A Reference Guide to Fetal and Neonatal Risk*. Edisi ke-13. Philadelphia: Wolters Kluwer.

Jurnal-jurnal terkini – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

NFNK6522 Klerksyip Farmakoterapi dalam Psikiatri

Kursus ini mengandungi sesi rondaan wad, pengajaran tepi-katil, perbincangan dan pembentangan kes klinikal. Pelajar akan dilatihkan dalam pengurusan farmakoterapi untuk pesakit-pesakit di dalam wad. Pengetahuan teori baharu dan dari pencarian literatur terkini akan diaplikasikan dalam pengurusan pesakit secara berasaskan bukti. Pelajar juga akan dilatih untuk mengenalpasti dan menguruskan isu-isu penjagaan farmaseutikal yang berpotensi atau sebenarnya telah berlaku. Selain itu, kemahiran membentang kes-kes klinikal secara lisan dan penulisan juga akan dilatih. Kes klinikal yang dipilih akan meliputi masalah berkaitan keresahan, skizofrenia, kemurungan dan gangguan bipolar.

Bacaan Asas

DiPiro, J.T., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L. & Posey, L.M. 2023. *DiPiro's Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. New York: McGraw Hill.

Schwinghammer, T.L., Koehler, J.M., Borchert, J.S., Slain, D. & Park, S.K. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill Medical.

Wells, B.G., DiPiro, T.T., Schwinghammer, T.L. & DiPiro, C.V. 2017. *Pharmacotherapy Handbook*. Edisi ke-10. USA: McGraw-Hill Education. (Rujukan Utama)

Whittlesea, C. & Hodson, K. 2019. *Clinical Pharmacy and Therapeutics*. Edisi ke-6. Oxford: Elsevier. (Rujukan Utama)

Zeind, C.S. & Carvalho, M.G. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. Edisi ke-12. Philadelphia: Wolters Kluwer.

NFNK6532 Klerksyip Farmakokinetik Klinikal

Pelajar akan dilatihkan dalam pengurusan farmakoterapi untuk pesakit-pesakit di dalam wad. Pengetahuan teori dan dari pencarian literatur akan diaplikasikan dalam pengurusan pesakit secara berasaskan bukti. Pelajar juga akan dilatih untuk mengenalpasti dan menguruskan isu-isu penjagaan farmaseutikal yang berpotensi atau sebenarnya telah berlaku. Selain itu, kemahiran membentang kes-kes klinikal secara lisan dan penulisan juga akan dilatih. Kes klinikal yang dipilih akan meliputi masalah berkaitan farmakokinetik ubat seperti penyerapan, penyebaran dan penyingkiran yang terbatas.

Bacaan Asas

Beringer, P.M. 2025. *Winter's Basic Clinical Pharmacokinetics*. Edisi ke-7. Philadelphia: Wolters Kluwer.

Brunton, L.L. & Knollmann, B.C. 2023. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*. Edisi ke-14. New York: McGraw Hill.

DiPiro, J.T., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L. & Posey, L.M. 2023. *Dipiro's Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. New York: McGraw Hill.

Ducharme, M.P. & Shargel, L. 2022. *Applied Biopharmaceutics & Pharmacokinetics*. Edisi ke-8. New York: McGraw Hill.

Zeind, C.S., Carvalho, M.G., Cheng, J.W., Zaiken, K. & LaPointe, T. 2024. *Applied Therapeutics: The Clinical Use of Drugs*. Edisi ke-12. Philadelphia: Wolters Kluwer Health.

NFNK6542 Klerksyip Farmakoterapi dalam Onkologi dan Farmasi Nuklear

Kursus ini mengandungi sesi rondaan wad, pengajaran tepi-katil, perbincangan dan pembentangan kes klinikal. Pelajar akan dilatihkan dalam pengurusan farmakoterapi untuk pesakit-pesakit di dalam wad. Pengetahuan teori baharu dan dari pencarian literatur terkini akan diaplikasikan dalam pengurusan pesakit secara berasaskan bukti. Pelajar juga akan dilatih untuk mengenalpasti dan menguruskan isu-isu penjagaan farmaseutikal yang berpotensi atau sebenarnya telah berlaku. Selain itu, kemahiran membentang kes-kes klinikal secara lisan dan penulisan juga akan dilatih. Kes klinikal yang dipilih akan meliputi masalah berkaitan kanser dan farmasi nuklear.

Bacaan Asas

Chisholm-Burns, M.A., et al. 2026. *Pharmacotherapy Principles & Practice*. Edisi ke-7. New York: McGraw-Hill.

Matthias, K.R., et al. 2023. *Pharmacotherapy Principles and Practice Study Guide: A Case-Based Care Plan Approach*. Edisi ke-6. New York: McGraw-Hill.

Schwinghammer, T.L., et al. 2023. *Schwinghammer's Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill.

Stoner, N., Mitchell, M. & Dunsmure, L. 2025. *Oxford Handbook of Clinical Pharmacy*. Edisi ke-4. Oxford: Oxford University Press.

Whittlesea, C. & Hodson, K. 2026. *Clinical Pharmacy and Therapeutics*. Edisi ke-7. Edinburgh: Elsevier.

Jurnal-jurnal terkini – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

NFNK6552 Klerksyip Farmakoterapi dalam Surgeri dan Pemakanan Parenteral

Kursus ini mengandungi sesi rondaan wad, pengajaran tepi katil, pembentangan dan perbincangan kes klinikal. Pelajar akan dilatih dalam pengurusan farmakoterapi dan sokongan pemakanan parenteral untuk pesakit-pesakit di dalam wad. Pengetahuan teori baharu dan dari pencarian literatur terkini akan diaplikasikan dalam pengurusan pesakit secara berasaskan bukti. Pelajar juga akan dilatih untuk mengenalpasti dan menguruskan isu-isu penjagaan farmaseutikal yang berpotensi atau sebenarnya telah berlaku. Selain itu, kemahiran membentang kes-kes klinikal secara lisan dan penulisan juga akan dilatih. Kes klinikal yang dipilih akan meliputi masalah berkaitan gastrosus, genitourinari, ortopedik, dan neurologi. Kes juga akan merangkumi masalah keperluan pemakanan parenteral pada pesakit surgeri.

Bacaan Asas

Cheah, F.C. 2022. *Evidence-Based Clinical Practice in Feeding the Preterm Infant*. Bangi: Penerbit Universiti Kebangsaan Malaysia.

Chisholm-Burns, M.A., et al. 2022. *Pharmacotherapy Principles & Practice*. New York: McGraw Hill.

DiPiro, J.T., et al. 2023. *Dipiro's Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. New York: McGraw-Hill.

Katz, D.L. 2022. *Nutrition in Clinical Practice*. Edisi ke-4. Philadelphia: Wolters Kluwer.

Wiffen, P., et al. 2017. *Oxford Handbook of Clinical Pharmacy*. Edisi ke-3. Oxford: Oxford University Press. (Rujukan Utama)

Jurnal-jurnal terkini – Clinical Nutrition, Journal of Parenteral and Enteral Nutrition, Hospital Pharmacy, International Journal of Clinical Pharmacy.

NFNK6562 Klerksyip Perkhidmatan Maklumat Ubat

Kursus ini melatih pelajar dalam proses klerksyip yang sistematik dan pengurusan kes klinikal yang berkesan. Topik-topik yang dibincangkan merangkumi sumber maklumat, pertanyaan maklumat ubat, proses penilaian literatur bagi menjawab pertanyaan maklumat ubat, cadangan dan saranan yang tepat berdasarkan maklumat berasaskan bukti, komunikasi profesional, kajian penggunaan ubat (MUR) dan pelaporan kesan advers ubat di penempatan farmasi. Selain itu, pelajar akan dilatih kemahiran membentang kes maklumat ubat secara lisan dan juga penulisan.

Bacaan Asas

Gabay, M. 2016. *The Clinical Practice of Drug Information*. Jones & Bartlett Learning. (Rujukan Utama)

Kier, K. & Goldwire, M. 2018. *Drug Information Resources and Literature Retrieval*. Edisi ke-7. ACCP's Pharmacotherapy Self-Assessment Program. (Rujukan Utama)

Malone, P., Meghan, M. & Park, S. 2022. *Drug Information: A Guide for Pharmacists*. Edisi ke-6. McGraw-Hill Education.

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-10. New York: McGraw-Hill Medical.

Pangkalan data Ovid MEDLINE, PubMed dan Cochrane.

NFNK6572 Klerksyip Pemantauan Pengurusan Ubat Pesakit

Kursus ini mengandungi sesi perjumpaan bersama pesakit untuk menjalankan pemantauan pengurusan ubat-ubatan. Ia melibatkan sangkutan klinikal, perbincangan dan pembentangan kes. Pelajar akan dilatih untuk menjalankan pemantauan pengurusan ubat pesakit melalui penilaian maklumat pesakit, pentaksiran pengunaan ubat dan memberi cadangan penyelesaian berkaitan isu penggunaan ubat pesakit seperti pendidikan pesakit dan lain-lain. Selain itu, kemahiran membentang kes klinikal secara lisan dan penulisan juga akan dilatih.

Bacaan Asas

DiPiro, J.T., Talbert, R.L., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L. & Posey, L.M. 2023. *Pharmacotherapy: A Pathophysiologic Approach*. Edisi ke-12. USA: McGraw-Hill Education.

Schwinghammer, T.L. Koehler, J.M. & Borchert, J.S. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. Edisi ke-12. New York: McGraw-Hill Education.

Whalen, K. & Hardin, H.C. 2018. *Medication Therapy Management: A Comprehensive Approach*. Edisi ke-2. McGraw Hill Education. (Rujukan Utama)

Zeind, C.S., Carvalho, M.G., Cheng, J.W.M., Zaiken, K. & LaPointe, T. 2024. *Applied Therapeutics: The Clinical Use of Drugs*. Edisi ke-12. Philadelphia: Wolters Kluwer Health.

Jurnal-jurnal terkini – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

Program Sarjana Sains (Analisis Farmaseutikal)

Pengenalan

Program ini bertujuan untuk melahirkan tenaga mahir dalam bidang analisis farmaseutikal sejajar dengan perkembangan industri farmaseutikal dan herba di negara ini. Program Sarjana Sains (Analisis Farmaseutikal) ini dapat membantu menghasilkan graduan yang berkemahiran yang akan memenuhi keperluan di sektor awam dan swasta dengan memberi pengetahuan dan kemahiran yang khusus dalam bidang analisis farmaseutikal.

Objektif

Objektif Pendidikan Program (OPP) adalah untuk menghasilkan:

OPP1 Sarjana yang menguasai pengetahuan lanjutan serta kemahiran praktikal, digital dan numerasi dalam bidang berkaitan analisis farmaseutikal selaras dengan keperluan profesion dan perkembangan industri.

OPP2 Sarjana yang mempamerkan kemahiran kepimpinan, autonomi, kebertanggungjawaban dan komunikasi berkesan dengan pelbagai pihak berkepentingan.

OPP3 Sarjana yang memiliki kemahiran pembelajaran sepanjang hayat serta pemikiran keusahawanan dalam menyelesaikan cabaran berkaitan bidang analisis farmaseutikal.

OPP4 Sarjana yang beretika, berintegriti dan profesional dalam melaksanakan tanggungjawab dalam bidang berkaitan analisis farmaseutikal.

Jumlah Unit

Jumlah unit wajib yang ditetapkan bagi program ini ialah 40 unit.

HASIL PEMBELAJARAN PROGRAM SARJANA SAINS (ANALISIS FARMASEUTIKAL)

Program Sarjana Sains (Analisis Farmaseutikal) bertujuan melahirkan graduan yang:

HPP1 Menguasai pengetahuan lanjutan berkaitan bidang analisis farmaseutikal.

HPP2 Menganalisis permasalahan kompleks dalam bidang berkaitan analisis farmaseutikal secara kritikal dan kreatif.

HPP3 Mengaplikasi kemahiran praktikal untuk menangani isu dalam bidang berkaitan analisis farmaseutikal.

HPP4 Menunjukkan kerjasama dengan individu dalam komuniti pembelajaran yang pelbagai.

HPP5 Mempamerkan kemahiran berkomunikasi secara berkesan dengan komuniti saintifik dan khalayak umum dalam bidang berkaitan analisis farmaseutikal.

HPP6 Mengaplikasi teknologi digital dan teknik analisis yang sesuai untuk penyelesaian masalah dalam bidang berkaitan analisis farmaseutikal.

HPP7 Menggunakan kemahiran numerik, grafik, dan bantuan visual untuk penyelesaian masalah dalam bidang berkaitan analisis farmaseutikal.

HPP8 Mempamerkan kualiti kepimpinan, intelektual, berpasukan, autonomi dan kebertanggungjawaban dalam pelaksanaan tugasan.

HPP9 Mempamerkan komitmen terhadap pembelajaran sepanjang hayat dan pembangunan diri.

HPP10 Mempamerkan ciri-ciri keusahawanan berkaitan bidang analisis farmaseutikal.

HPP11 Mematuhi amalan undang-undang, etika, profesional dan lestari.

Kurikulum Program Sarjana Sains (Analisis Farmaseutikal)

Kursus Teras Program

Secara Sepenuh Masa:

Tempoh lazim bagi pengajian sepenuh masa ialah satu (1) tahun atau dua (2) semester. Senarai kursus yang ditawarkan bagi setiap semester adalah seperti berikut:

Semester I

Kod	Tajuk Kursus	Unit
NFNA6613	Penemuan dan Pembangunan Dadah	3
NFNA6713	Jaminan Kualiti Farmaseutikal	3
NFNA6813	Reka Bentuk Dosej Farmaseutikal	3
NFNA6913	Teknologi Biofarmaseutikal	3
NFNA6612	Kaedah Penyelidikan & Keselamatan Di Tempat Kerja	2
NFNA6712	Statistik dan Kemometrik untuk Analisis Farmaseutikal	2
NFNA6812	Projek Penyelidikan I	2
	Jumlah kredit	**18**

Semester II

Kod	Tajuk Kursus	Unit
NFNA6624	Kaedah Spektroskopi dalam Elusidasi Struktur	4
NFNA6623	Kaedah Pemisahan Farmaseutikal	3
NFNA6622	Kawalan Kualiti Farmaseutikal	2
NFNA6722	Farmaseutikal Halal	2
NFNA6822	Analisis Herba	2
NFNA6723	Biokesetaraan	3
NFNA6626	Projek Penyelidikan II	6
	Jumlah kredit	**22**

Secara Separuh Masa:

Tempoh lazim bagi pengajian separuh masa ialah dua (2) tahun atau empat (4) semester. Cadangan pendaftaran kursus adalah seperti berikut:

Semester I

Kod	**Tajuk Kursus**	**Unit**
NFNA6613	Penemuan dan Pembangunan Dadah	3
NFNA6713	Jaminan Kualiti Farmaseutikal	3
NFNA6612	Kaedah Penyelidikan & Keselamatan Di Tempat Kerja	2
NFNA6812	Projek Penyelidikan I	2
	Jumlah kredit	**10**

Semester II

Kod	**Tajuk Kursus**	**Unit**
NFNA6624	Kaedah Spektroskopi dalam Elusidasi Struktur	4
NFNA6622	Kawalan Kualiti Farmaseutikal	2
NFNA6723	Biokesetaraan	3
	Jumlah kredit	**9**

Semester III

Kod	**Tajuk Kursus**	**Unit**
NFNA6813	Reka Bentuk Dosej Farmaseutikal	3
NFNA6913	Teknologi Biofarmaseutikal	3
NFNA6712	Statistik dan Kemometrik untuk Analisis Farmaseutikal	2
	Jumlah kredit	**8**

Semester IV

Kod	**Tajuk Kursus**	**Unit**
NFNA6623	Kaedah Pemisahan Farmaseutikal	3
NFNA6722	Farmaseutikal Halal	2
NFNA6822	Analisis Herba	2
NFNA6626	Projek Penyelidikan II	6
	Jumlah kredit	**13**

Kursus Wajib Universiti

(a) Untuk calon luar negara yang tidak mempunyai pengetahuan dan kemahiran asas dalam Bahasa Melayu atau Bahasa Melayu bukan bahasa utama negara pelajar (bahasa kebangsaan atau bahasa rasmi):

Kod	**Tajuk Kursus**	**Unit**
LMCM1083	Bahasa Melayu Komunikasi Antarabangsa	3

(b) Untuk calon dari Singapura, Brunei Darussalam, Indonesia dan Thailand bahagian Selatan:

Kod	**Tajuk Kursus**	**Unit**
LMCM1093	Bahasa Melayu Untuk Pelajar Nusantara	3

Sinopsis Kursus Program Sarjana Sains (Analisis Farmaseutikal)

Kursus Teras Program

NFNA6612 Kaedah Penyelidikan & Keselamatan Di Tempat Kerja
Kursus ini bertujuan memperkenalkan asas penyelidikan dan akta keselamatan dan keselamatan pekerja (OSHA). Perbincangan selanjutnya meliputi menguasai pemahaman dalam melakukan tinjauan literatur, penulisan cadangan penyelidikan dan menjalankan projek penyelidikan secara matang serta mengaplikasi aspek-aspek keselamatan dan kesihatan pelajar semasa menjalankan penyelidikan yang berkaitan. Di antara tajuk yang dibincangkan termasuklah peraturan-peraturan mengenai bahan kimia berbahaya, pengendalian, penyimpanan dan pelupusan bahan kimia berbahaya serta prosedur keselamatan dalam makmal.

Bacaan Asas

Allwood, J., Ahlsen, E. & Hashim, A. 2021. *Getting Started with Research: A Guide to Research Methodology*. Kuala Lumpur, Malaysia: Universiti Malaya Press.

Bhattacharya, P.K. 2021. *Research Methodology in the Health Sciences: A Quick Reference Guide*. United States: McGraw Hill.

Dane, F.C. & Carhart, E. 2023. *Evaluating Research: Methodology for People Who Need to Read Research*. Edisi ke-3. United Kingdom: Sage.

Ismail, S., Mokhtar, N. & Hashim, R. 2023. *10 Step-By-Step Guides to Academic Research Proposal Writing*. Kuala Lumpur, Malaysia: IIUM Press.

Paul, J. & Criado, A.R. 2020. The art of writing literature review: What do we know and what do we need to know? *International Business Review* 29(4): 101717.

NFNA6613 Penemuan dan Pembangunan Dadah
Kursus ini merangkumi prinsip asas dan strategi dalam penemuan dadah baharu yang dibangunkan untuk dipasarkan termasuk pembangunan dadah daripada hasil semulajadi. Pelajar juga akan diberi pendedahan mengenai sifat fizikal/kimia dadah, cara pemberian ubat, kepentingan bahan dan formulasi dadah bagi penyerapan dan pengedarannya secara *in vivo* ke tapak tindakan.

Bacaan Asas

Florence, A.T. & Atwood, D. 2011. *Physicochemical Principles of Pharmacy*. Edisi ke-5. London: Pharmaceutical Press. (Rujukan Utama)

Nogrady, T. & Weaver, D.F. 2005. M*edicinal Chemistry: A Molecular and Biochemical Approach*. Edisi ke-3. United Kingdom: Oxford University Press. (Rujukan Utama)

Cairns, D. 2012. *Essentials of Pharmaceutical Chemistry*. London: Pharmaceutical Press. (Rujukan Utama)

Patrick, G.L. 2023. *An Introduction to Medicinal Chemistry*. Edisi ke-7. United Kingdom: Oxford University Press.

Shargel, L. & Yu, A.B.C. 2022. *Applied Biopharmaceutics and Pharmacokinetics*. Edisi ke-8. USA: McGraw Hill Education.

NFNA6622 Kawalan Kualiti Farmaseutikal

Kursus ini mengandungi sesi kuliah, tutoran, amali dan bengkel. Kursus bertujuan memberi pelajar pengetahuan dan kemahiran dalam pelbagai aspek yang berkaitan kawalan kualiti dadah dan farmaseutikal. Penekanan diberi kepada teknik-teknik asas dan kaedah-kaedah instrumentasi moden yang digunakan dalam analisis dadah dalam bahan mentah, formulasi dan bendalir fisiologi, kaedah penyampelan, kawalan bahan mentah dan keluaran siap menurut farmakopoeia rasmi dan piawai lain, kawalan dalam proses ke atas pelbagai bentuk dos, kajian kestabilan dan pengujian, pemantauan dan kawalan persekitaran dan kawalan kualiti statistik. Sesi amali membolehkan pelajar mengaplikasi kaedah-kaedah yang sesuai untuk pemiawaian, analisis dan dan kawalan kualiti ke atas bahan mentah dan keluaran siap farmaseutikal menurut piawai yang telah ditetapkan.

Bacaan Asas

British Pharmacopoeia Commission. 2026. *British Pharmacopoeia 2027*. London: The Stationery Office.

Bunn, G.P. (pnyt.) 2026. *Good Manufacturing Practices for Pharmaceuticals*. Edisi ke-8. United States: Drugs and the Pharmaceutical Sciences.

Pharmaceutical Inspection Co-operation Scheme (PIC/S). 2023. *Guide to Good Manufacturing Practice for Medicinal Products, PE 009-8*. Geneva: PIC/S.

Watson, D.G. 2020. *Pharmaceutical Analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists*. Edisi ke-5. London: Elsevier Health Sciences.

United States Pharmacopeia. 2026. *United States Pharmacopeia–National Formulary (USP–NF Online)*. Rockville, MD: United States Pharmacopeia.

NFNA6623 Kaedah Pemisahan Farmaseutikal

Kursus ini mendedahkan pemahaman yang mendalam kepada pelajar terhadap teori dan aplikasi teknik kaedah pemisahan serta mempunyai keupayaan untuk memilih teknik dan kaedah analisis yang bersesuaian dan mengaplikasi pengetahuan dalam mencari penyelesaian yang praktikal. Teknik yang dipelajari termasuk aplikasi kaedah kromatografi cecair tekanan tinggi, kromatografi gas, kromatografi cecair superkritikal, elektroforesis, kromatografi gas-jisim spektrofotometri dan kromatografi cecair-jisim spektrofotometri dalam analisis bahan dan produk farmaseutikal.

Bacaan Asas

Beckett, A.H. & Stenlake, J.B. 2005. *Practical Pharmaceutical Chemistry. Part 2*. UK: Athlone Press. (Rujukan Utama)

British Pharmacopoeia. 2026. London: British Pharmacopoeia Commission Secretariat of the Medicines and Healthcare Products Regulatory Agency.

Steen, H.H., Stig, P. & Knut, E.R. 2019. *Introduction to Pharmaceutical Chemical Analysis*. Wiley. (Rujukan Utama)

Watson, D.G. 2017. *Pharmaceutical Analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists*. Edinburgh: Elsevier Churchill Livingstone. (Rujukan Utama)

NFNA6624 Kaedah Spektroskopi dalam Elusidasi Struktur

Setelah menghadiri kursus ini, pelajar seharusnya mampu menguasai pemahaman yang matang dalam teori, aplikasi dan praktikal yang berkaitan dengan teknik spektroskopi lanjutan termasuk prinsip, peralatan, pentafsiran data dan kegunaannya dalam analisis farmaseutikal. Pelajar juga seharusnya mempunyai keupayaan untuk memilih teknik dan kaedah analisis yang bersesuaian dan mengaplikasi pengetahuan dalam membuat penyelesaian yang praktikal. Teknik spektroskopi yang akan dipelajari adalah spektroskopi ultralembayung dan nampak, pendarfluor, penyerapan atom, pemancaran atom, inframerah, Raman, resonans magnet nukleus dan spektroskopi jisim. Pelajar-pelajar juga akan mempunyai pengetahuan yang mendalam tentang kegunaan gabungan kaedah spektroskopi bagi mengelusidasi struktur sebatian dalam penemuan dadah dan analisis farmaseutikal dalam pembangunan dan kawalan kualiti dadah.

Bacaan Asas

Beckett, A.H. & Stenlake, J.B. 2005. *Practical Pharmaceutical Chemistry. Part 2*. UK: Athlone Press. (Rujukan Utama)

British Pharmacopoeia. 2026. London: British Pharmacopoeia Commission Secretariat of the Medicines and Healthcare Products Regulatory Agency.

Pavia, D.L., Lampman, G.M., Kriz, G.S. & Vyvyan, J.A. 2015. *Introduction to Spectroscopy*. USA: Cengage Learning. (Rujukan Utama)

Siddiqui, A.A. 2011. *Pharmaceutical Analysis*. New Delhi: CBS Publishers. (Rujukan Utama)

Watson, D.G. 2020. *Pharmaceutical Analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists*. Edinburgh: Elsevier Churchill Livingstone. (Rujukan Utama)

NFNA6712 Statistik dan Kemometrik untuk Analisis Farmaseutikal

Kursus ini bertujuan mendedahkan pelajar kepada teori dan aplikasi teknik analisis statistik kimia farmaseutikal, berupaya untuk memilih kaedah yang bersesuaian dan mengaplikasi pengetahuan dalam menyelesaikan masalah berkaitan statistik dan kemometrik. Teknik yang dipelajari termasuk aplikasi statistik (soalan dan hipotesis penyelidikan, reka bentuk penyelidikan, bias, perancu, perambangan, pengiraan saiz sampel, statistik deskriptif dan statistik inferens) dan analisis data multivariat (analisis komponen utama (PCA), analisis gugusan, pengkelasan dan regresi multivariat). Latihan penggunaan perisian komputer akan dijalankan bagi analisis statistik dan data multivariat menggunakan SPSS.

Bacaan Asas

Dretzke, B.J. 2013. *Statistics with Microsoft Excel*. Boston: Pearson. (Rujukan Utama)

Luna, A.S. (pnyt.) 2017. *Chemometrics: Methods, Applications and New Research*. UK: Nova Science Pub Inc. (Rujukan Utama)

Montgomery, D.C. 2013. *Statistical Quality Control: A Modern Introduction*. Edisi ke-7. (Rujukan Utama)

Wehrens, R. 2011. *Chemometrics with R: Multivariate Data Analysis in the Natural Sciences and Life Sciences*. Berlin: Springer. (Rujukan Utama)

Wiley Sharif, S. 2018. *Statistics for Nonstatisticians: Basic Guide to SPSS*. Malaysia. (Rujukan Utama)

NFNA6713 Jaminan Kualiti Farmaseutikal

Kursus ini bertujuan memberikan pengetahuan dan kefahaman kepada pelajar berhubung keperluan-keperluan spesifik berkaitan jaminan kualiti dan peraturan-peraturan yang berkaitan dalam industri farmaseutikal dan industri lain yang berkaitan. Kuliah memberi penekanan kepada prinsip jaminan kualiti, dokumentasi dan rekod, prinsip-prinsip dan aplikasi garis panduan Amalan Perkilangan Baik (GMP), Amalan Makmal Baik (GLP) dan Amalan Klinikal Baik (GCP) serta keperluan-keperluan regulatori untuk menjamin kualiti dalam pengeluaran farmaseutikal dan industri berkaitan. Lawatan industri dan sesi audit dapat mengukuhkan pengetahuan dan kemahiran dengan melihat kes-kes sebenar sistem pengawalan GMP dan GLP. Kursus ini memberikan pendedahan dari aspek pengetahuan teori dan kemahiran dalam pelbagai aplikasi jaminan kualiti.

Bacaan Asas

British Pharmacopoeia Commission. 2026. *British Pharmacopoeia 2027*. London: The Stationery Office.

Pharmaceutical Inspection Co-operation Scheme (PIC/S). 2023. *Guide to Good Manufacturing Practice for Medicinal Products, PE 009-17*. Geneva: PIC/S.

Tripathy, S. 2026. *Pharmaceutical Quality Assurance: Textbook for B.Pharm Students: Complete Guide with QA, QC, GMP & TQM Concepts*. Amazon Digital Services LLC-KDP.

World Health Organization (WHO). 2024. *Quality Assurance of Pharmaceuticals: A Compendium of Guidelines and Related Materials. Volume 2: Good Manufacturing Practices and Inspection*. Edisi ke-10. Geneva: World Health Organization.

United States Pharmacopeial Convention. 2026. *United States Pharmacopeia–National Formulary (USP–NF Online)*. Rockville, MD: United States Pharmacopeia.

NFNA6722 Farmaseutikal Halal

Industri halal sedang berkembang pesat sejajar dengan permintaan pengguna yang tinggi di serata dunia. Bermula dengan sektor makanan, konsep halal telah digunapakai di dalam beberapa sektor lain seperti perbankan, perhotelan, fesyen, kosmetik, dan farmaseutikal. Prinsip halal bukan lagi hanya dipandang sebagai keperluan agama tetapi telah diterima sebagai salah satu jaminan kualiti perkhidmatan - atau produk di peringkat antarabangsa. Konsep halal dan toyyiban menekankan keperluan melengkapi dan menyempurnakan intipati dari -piawai asas atau ambang minimum (halal) iaitu tentang kesihatan, keselamatan, sanitasi, khasiat, pendedahan risiko, alam sekitar, aspek berkaitan sosial dan lain-lain mengikut keperluan situasi atau aplikasi. Malaysia telah memberi komitmen dan kesungguhan dalam membangunkan industri halal selaras dengan aspirasi negara untuk menjadi juara hub halal global. Sejajar ini, industri halal farmaseutikal juga telah berkembang dan konsep halal telah diambil kira di dalam perkhidmatan farmasi. Sehubungan itu, pelajar perlu dilengkapi dengan kefahaman dan kemahiran berkaitan topik ini.

Objektif utama kursus ini adalah supaya pelajar dapat memahami dan seterusnya menjelaskan penggunaan konsep halal dan toyyiban di dalam bidang farmaseutikal terutamanya bidang amalan, perkilangan dan penyelidikan. Pelajar juga akan dijelaskan kepada permasalahan dan stigma negatif berkenan konsep ini. Kursus akan disampaikan melalui kuliah, perbincangan dalam kelas dan kajian kes yang akan dikongsi oleh wakil-wakil industri. Kursus ini turut memberi fokus kepada pembelajaran melalui pengalaman

di mana para pelajar akan menjalankan kajian penyelidikan berkaitan topik halal farmaseutikal secara berkumpulan dan menganjurkan satu seminar berkaitan kesedaran mengenai halal farmaseutikal.

Bacaan Asas

Ab Latiff, J., Zakaria, Z. & Man, S. 2024. Advancing halal vaccine certification in Malaysia: Exploring the legal status criteria of Islamic principles through fiqh rules. *Journal of Ifta and Islamic Heritage* 3(1): 1-24.

Department of Standards Malaysia. 2019. *MS 2424:2019 Halal Pharmaceuticals – General Requirements (First Revision)*. Cyberjaya, Malaysia: Department of Standards Malaysia. (Rujukan Utama)

MdDahlal, N., Desa, R. & Zain, M.N. 2025. The Ministry of Health (MOH) Malaysia policy regarding the use of medications containing non-halal ingredients: An analysis from the Shari'ah perspective. *Halalsphere* 5(1): 35-41. https://doi.org/10.31436/hs.v5i1.104

Ministry of Health Malaysia. 2018. *Panduan Penggunaan Ubat-ubatan yang Mengandungi Unsur Tidak Halal. Program Perkhidmatan Farmasi*. Kementerian Kesihatan Malaysia. (Rujukan Utama)

Standards and Metrology Institute for Islamic Countries (SMIIC). 2022. *OIC/SMIIC 50-1:2022 Halal Pharmaceuticals – Part 1: General Requirements*. Istanbul: SMIIC.

NFNA6723 Biokesetaraan

Kursus ini mengandungi sesi kuliah, tutoran, kajian kes dan pembelajaran berasaskan masalah, untuk menganalisis dan mengkaji secara kritis atas laporan teknik validasi, bioanalisis dan klinikal yang berkaitan dengan biokesetaraan. Pelajar yang mengikuti kursus ini seharusnya boleh memberi penjelasan terperinci tentang ujian pelarutan in vitro dan in vivo. Setelah menamatkan kursus ini, pelajar harus mempunyai pemahaman yang baik mengenai pelbagai aspek berkenaan garis panduan biokesetaraan kebangsaan dan antarabangsa yang terkini. Di samping itu, pelajar harus dapat melakukan pengiraan farmakokinetik dan statistik, dengan juga keupayaan untuk menyediakan beberapa protokol pusat biokesetaraan yang relevan.

Bacaan Asas

ASEAN. 2015. *ASEAN Guideline for the Conduct of Bioequivalence Studies*. (Rujukan Utama)

European Medicines Agency. 2014. *Guideline on Similar Biological Medicinal Products Containing Biotechnology-Derived Proteins as Active Substance: Non-Clinical and Clinical Issues*. (Rujukan Utama)

Food and Drug Administration. 2026. *Statistical Approaches to Establishing Bioequivalence: Guidance for Industry*.

National Pharmaceutical Regulatory Agency. 2023. *Guidance Document and guidelines for Registration of Biosimilars in Malaysia*. Edisi ke-2.

National Pharmaceutical Regulatory Agency. 2024. *Malaysian Guideline on Bioequivalence Inspection*. Edisi ke-2.

NFNA6813 Reka Bentuk Dosej Farmaseutikal

Kursus ini terdiri daripada dua bahagian utama iaitu bahagian radiofarmaseutikal yang menekankan penggunaan, pengiraan dos dan kawalan kualiti produk radiofarmaseutikal dan bahagian reka bentuk dos yang merangkumi pelbagai jenis reka bentuk dos farmaseutikal, aspek preformulasi, dan pembungkusan. Penekanan diberikan pada fasa prefomulasi sediaan farmaseutikal dan aktiviti yang melibatkan pemprosesan pelbagai bentuk dos farmaseutikal seperti tablet, kapsul, ampaian, emulsi, gel, sediaan steril dan sebagainya.

Bacaan Asas

Ansel, H.C., Popovich, N.G. & Allen, L.V.Jr. 2021. *Pharmaceutical Dosage Forms and Drug Delivery Systems*. Edisi ke-12. Baltimore: Lippincott Williams and Wilkins.

Aulton, M.E & Taylor, K. (pnyt.) 2021. *Aulton's Pharmaceutics: The Design and Manufacture of Medicines*. Edisi ke-6. Edinburgh: Churchill Livingstone.

British Pharmacopoeia. 2019. London: Royal Pharmaceutical Society of Great Britain. (Rujukan Utama)

Gibson, M., 2009. Pharmaceutical Preformulation and Formulation. Edisi ke-2. New York: Informa Healthcare. (Rujukan Utama)

Theobold, A. (pnyt.) 2010. *Sampson's Textbook of Radiopharmacy*. Edisi ke-4. London: Pharmaceutical Press. (Rujukan Utama)

NFNA6822 Analisis Herba

Kursus ini bertujuan mendedahkan pelajar kepada analisis ubat-ubatan dari sumber semula jadi. Topik pengajian merangkumi fitokimia dan kawalan kualiti dadah mentah (crude drug), sediaan dan produk herba; termasuk peraturan, proses pembuatan dan pemiawaian produk herba, dan pelbagai ujian kawalan kualiti, keselamatan dan keberkesanan.

Bacaan Asas

British Pharmacopoeia. London: British Pharmacopoeia Commission Secretariat of the Medicines and Healthcare Products Regulatory Agency. (Rujukan Utama)

Guidelines on Good Manufacturing Practice for Traditional Medicines and Health Supplements. 2008. Kuala Lumpur: Ministry of Health, Malaysia. (Rujukan Utama)

Heinrich, M., Barnes, J., Prieto-Garcia, J., Gibbons, S. & Williamson, E.M. 2023. *Fundamentals of Pharmacognosy & Phytotherapy*. Edisi ke-4. The Netherlands: Elsevier.

List, P.H. & Schmidt, P.C. 1990. *Phytopharmaceutical Technology*. Boca Raton: CRC Press. (Rujukan Utama)

WHO. 2011. *Quality Control Methods for Herbal Materials*. Geneva: World Health Organization. (Rujukan Utama)

NFNA6913 Teknologi Biofarmaseutikal

Kursus ini terdiri daripada kuliah dan pembelajaran sendiri. Pelajar akan disampaikan dengan gambaran yang seimbang mengenai industri biofarmaseutikal, bukan sahaja dari segi mengkategorikan produk yang ada sekarang, tetapi juga menggambarkan bagaimana ubat-ubatan ini dihasilkan dan dibawa ke pasaran. Penekanan utama diletakkan terhadap agen terapeutik berasaskan polipeptida serta potensi ubat berasaskan asid nukleik. Kursus ini memberi pandangan tentang perkembangan terkini dalam sektor

ini, memberikan fokus ke atas penghasilan dan kelulusan produk komersial, termasuk bahagian-bahagian baru yang substansial memperincikan teknik-teknik yang digunakan untuk ujian biofarmaseutikal, cabaran kajian klinikal, dan kemajuan dalam genomik dan proteomik mungkin akan memberi kesan kepada pembangunan dadah (bio) farmaseutikal.

Bacaan Asas

Beg, S. & Hasnai, M.S. 2019. *Pharmaceutical Quality by Design: Principles and Applications*. USA: Academic Press. (Rujukan Utama)

Eibl, R. & Eibl, D. 2019. *Single-Use Technology in Biopharmaceutical Manufacture*. Edisi ke-2. New York: John Wiley & Sons Ltd. (Rujukan Utama)

ISPE Headquarters. 2023. *Baseline Guide Vol 6: Biopharmaceutical Manufacturing Facilities*. Edisi ke-3. Washington DC: ISPE.

Katzung, B.G., Masters, S.B. & Trevor, A.J. 2023. *Basic and Clinical Pharmacology*. Edisi ke-16. New York: McGraw-Hill Medical.

Walsh, G. 2003. *Biopharmaceuticals: Biochemistry and Biotechnology*. Edisi ke-2. New York: Wiley-Blackwell. (Rujukan Utama)

NFNA6812 Projek Penyelidikan I

Kursus ini melatih pelajar untuk merangka dan menjalankan projek penyelidikan, menganalisa dan mentafsir data serta penulisan kertas projek. Jenis penyelidikan yang dilakukan adalah kajian makmal dalam bidang analisis farmaseutikal. Pelajar akan menjalankan projek penyelidikan selama dua semester di bawah seliaan pensyarah. Aktiviti kursus pada semester pertama termasuklah pembentangan cadangan penyelidikan dan kerja makmal.

Bacaan Asas

Panduan Penulisan Tesis Gaya UKM 2015. Edisi ke-3. Bangi: Pusat Pengajian Siswazah, Universiti Kabangsaan Malaysia. (Rujukan Utama)

Rowe, P. 2016. *Essential Statistics for the Pharmaceutical Sciences*. Oxford: John Wiley & Sons. (Rujukan Utama)

Yadav, S., Rawal, G. & Baxi, M. 2016. Plagiarism - A serious scientific misconduct. *International Journal of Health Sciences and Research* 6(2): 364-366. (Rujukan Utama)

Jurnal berkaitan dengan bidang penyelidikan.

Buku berkaitan dengan bidang penyelidikan.

NFNA6626 Projek Penyelidikan II

Kursus ini mendedahkan pelajar kepada prinsip-prinsip merekabentuk dan menjalankan projek penyelidikan, mentafsir dan menganalisa data dan menulis kertas projek. Projek penyelidikan adalah berasaskan makmal berkaitan dengan analisis farmaseutikal. Pelajar akan menjalankan projek penyelidikan di bawah penyeliaan pensyarah. Aktiviti kursus termasuk penulisan kertas projek, pembentangan keputusan dan peperiksaan lisan.

Bacaan Asas

Panduan Penulisan Tesis Gaya UKM 2015. Edisi ke-3, Bangi: Pusat Pengajian Siswazah, Universiti Kabangsaan Malaysia. (Rujukan Utama)

Rowe, P. 2016. *Essential Statistics for the Pharmaceutical Sciences*. Oxford: John Wiley & Sons. (Rujukan Utama)

Yadav, S., Rawal, G. & Baxi, M. 2016. Plagiarism - A serious scientific misconduct. *International Journal of Health Sciences and Research* 6(2): 364-366. (Rujukan Utama)

Jurnal berkaitan dengan bidang penyelidikan.

Buku berkaitan dengan bidang penyelidikan.

Postgraduate Studies Programmes

Faculty of Pharmacy
Academic Session 2026 – 2027

Postgraduate Study Programmes (Research Mode) Faculty of Pharmacy

Introduction

Multidisciplinary product research and development is one of the key priorities consistently emphasized in the research-mode postgraduate programmes offered by the Faculty of Pharmacy, namely the Master of Science and Doctor of Philosophy (PhD) programmes. Research topics offered under both programmes are broadly categorised into three main areas: Pharmaceutical Chemistry & Pharmacology, Pharmaceutical and Clinical Pharmacy, and Pharmacy Practice.

Programmes Education Objectives (PEO) of Postgraduate Studies

1. The Master of Science programme aims to produce:

    PEO 1 Scholars who master advanced knowledge, as well as practical, digital and numerical skills in pharmacy-related fields, in line with the needs of the profession and industry developments.

    PEO2 Scholars who demonstrate leadership, autonomy, accountability, and skills in communicating effectively with various stakeholders.

    PEO3 Scholars who possess lifelong learning skills and an entrepreneurial mindset for solving challenges in the field of pharmacy.

    PEO4 Scholars who uphold ethics, integrity, and professionalism in carrying out responsibilities in pharmacy-related fields.

2. The Doctor of Philosophy programme aims to produce:

    PEO 1 Pharmacy experts who are able to synthesise new ideas and integrate knowledge with practical, digital, and numerical skills to enhance the profession and drive industry developments.

    PEO2 Pharmacy experts who demonstrate thought leadership, professional autonomy, strategic accountability, and effective communication with various stakeholders.

    PEO3 Pharmacy experts who apply lifelong learning and an entrepreneurial mindset to generate innovative solutions for tackling challenges.

PEO4 Pharmacy experts who uphold ethics, integrity, and professionalism in leading research projects.

PROGRAMME LEARNING OUTCOMES (PLOs) FOR MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY PROGRAMMES

Master of Science

The Master of Science programme aims to produce graduates who are able to:

PLO1 Master advanced knowledge related to the field of pharmacy.

PLO2 Analyse complex problems critically and creatively in pharmacy-related fields.

PLO3 Conduct research with practical skills to address issues in pharmacy-related fields.

PLO4 Demonstrate collaboration with individuals in diverse learning communities.

PLO5 Demonstrate skills in communicating effectively with both the scientific community and the general public in pharmacy-related fields.

PLO6 Apply appropriate digital technologies and analytical techniques to address problems in pharmacy-related fields.

PLO7 Utilise numerical skills, graphics, and visual aids to solve problems in pharmacy-related fields.

PLO8 Demonstrate leadership, intellectual qualities, teamwork, autonomy, and accountability in executing tasks.

PLO9 Demonstrate a commitment to lifelong learning and self-development.

PLO10 Demonstrate entrepreneurial qualities relevant to the field of pharmacy.

PLO11 Conduct research in compliance with legal, ethical, professional, and sustainability standards.

Doctor of Philosophy

The Doctor of Philosophy programme aims to produce graduates who are able to:

PLO1 Integrate advanced knowledge and prior research to generate new discoveries in pharmacy-related fields.

PLO2 Synthesise information to solve complex problems critically, creatively, and innovatively in pharmacy- related fields.

PLO3 Conduct research with practical skills, independence, care, a systematic approach, and minimal supervision.

PLO4 Demonstrate collaboration within diverse research teams and professional communities.

PLO5 Demonstrate skills in communicating research and findings effectively to both the scientific community and the general public.

PLO6 Apply digital technologies and analytical approaches to advance knowledge in pharmacy-related fields.

PLO7 Utilise numerical skills and techniques for visualising complex data to solve problems in related fields and disseminate research findings.

PLO8 Demonstrate intellectual leadership, accountability, professionalism, and the ability to make strategic decisions.

PLO9 Practising lifelong learning to enhance knowledge and professional skills.

PLO10 Integrate an entrepreneurial mindset into research design and innovation in pharmacy- related fields.

PLO11 Conduct research in compliance with legal, ethical, professional, and sustainability standards.

Types of Programmes

Master of Science

The Master of Science programme offered is a research study which requires candidates to write a dissertation not exceeding 60,000 words. Candidates also should pass their viva voce examination and meet the requirements for the award of the Master of Science degree which is publishing at least ONE (1) manuscript in a WoS- or Scopus-indexed journal.

For full-time studies, the typical period is two (2) years, and the maximum period is three (3) years; for part-time studies, the typical period is three (3) years, and the maximum period is four (4) years.

Doctor of Philosophy

The PhD programme offered is a research study which requires candidates to write a thesis not exceeding 100,000 words. Candidates also should pass their viva voce examination and meet the requirements for the award of the Doctor of Philosophy degree which is publishing at least TWO (2) manuscripts in WoS- or Scopus-indexed journals.

For full-time studies, the typical period is three (3) years, and the maximum period is six (6) years; for part-time studies, the typical period is four (4) years, and the maximum period is seven (7) years.

Extension of period of study and deferment

Students may apply for additional study time for up to three (3) semesters before reaching the maximum period of study by submitting a written application to the Dean. Any application to extend the period of study for a fourth semester must be approved by the Senate.

Students may also apply for deferment of study based on reasonable grounds, and the duration of this deferment will not be considered part of the period of study. A deferment of study may be permitted for a minimum period of one (1) semester and must not exceed four (4) semesters throughout the duration of study, except in cases involving health-related reasons.

University Compulsory Course

(a) For international candidates with no knowledge and basic skills in Malay language or Malay language is not the main language of the candidate (national language or official language):

Code	Course Title	Unit
LMCM1083	Bahasa Melayu Komunikasi Antarabangsa	3

(b) For foreign candidates from Singapore, Brunei Darussalam, Indonesia and Southern Thailand:

Code	Course Title	Unit
LMCM1093	Bahasa Melayu Untuk Pelajar Nusantara	3

Faculty Compulsory Course

Code	Course Title*	Unit
NFNP6013	Research Methodology and Innovation	3
NFNP7013	Research Administration, Innovation and Commercialisation	3

**Students are required to register for only one course. Master of Science students are required to register for NFNP6013, while Doctoral students are required to register for NFNP7013.*

Synopses of Faculty Compulsory Courses

NFNP6013 Research Methodology and Innovation

This course focuses on three aspects of research ie. research methodology, statistical analysis and innovation. Upon completion of this course, students should be able to conduct literature reviews, apply appropriate research methods and statistical analysis techniques, acquire knowledge of intellectual property and commercialization and be able to propose entrepreneurial project-oriented research.

Recommended Reading

Cargill, M. & O'Connor, P.D. 2021. *Writing Scientific Research Articles: Strategy and Steps*. John Wiley & Sons.

Herman, A. 2025. *Research Methodology: Best Practices for Rigorous, Credible, and Impactful Research*. India: Sage.

Lebrun, J.L. & Lebrun, J. 2021. *Scientific Writing 3.0: A Reader and Writer's Guide*. World Scientific.

Panduan Penulisan Tesis Gaya UKM. 3rd Edition 2015. Bangi: Pusat Siswazah, Universiti Kebangsaan Malaysia.

Rossi, R.J. 2022. *Applied Biostatistics for the Health Sciences*. 2nd Edition. Wiley: Hoboken, NJ.

NFNP7013 Research Administration, Innovation and Commercialization

This course focuses on three aspects of research ie. research administration, innovation and commercialization. Upon completion of this course, students should be able to produce Review Articles, apply appropriate research methods and statistical analysis techniques, understand the intellectual property registration process and research-based commercial products as well as be able to propose entrepreneurial project-oriented research.

Recommended Reading

Cargill, M. & O'Connor, P.D. 2021. *Writing Scientific Research Articles: Strategy and Steps*. John Wiley & Sons.

Herman, A. 2025. *Research Methodology: Best Practices for Rigorous, Credible, and Impactful Research*. India: Sage.

Lebrun, J.L. & Lebrun, J. 2021. *Scientific writing 3.0: A Reader and Writer's Guide*. World Scientific.

Panduan Penulisan Tesis Gaya UKM. 3rd Edition 2015. Bangi: Pusat Siswazah, Universiti Kebangsaan Malaysia.

Rossi, R.J. 2022. *Applied Biostatistics for the Health Sciences*. 2nd Edition. Wiley: Hoboken, NJ.

Areas of Research for Master of Science and Doctor of Philosophy

Pharmaceutical Chemistry & Pharmacology

- Phytochemical studies
- Pharmacognostical studies
- Herbal product development from natural resources
- Synthesis of novel bioactive derivatives
- Herbal analysis
- Pharmacology and toxicology studies
- Pharmaceutical analysis and quality control
- Animal model behavioural studies
- Neurogastroimmunology
- Cardiovascular and cerebrovascular studies
- Bone health studies
- Cancer studies

Pharmaceutics

- Topical and transdermal delivery
- Solid dosage forms
- Protein and gene delivery
- Injections and sterile preparations
- Colonic drug delivery
- Polymer synthesis for drug delivery and targeting
- Vaccine development
- Novel drug delivery systems
- Nanomedicine

Clinical Pharmacy & Pharmacy Practice

- Pharmacotherapeutics
- Clinical pharmacokinetics
- Pharmacogenomics
- Medication safety
- Medication information and literacy
- Medication adherence
- Pharmacist competency
- Pharmacy education
- Drugs in sport

Conversion from Master's Programme to Doctoral Programme

The requirements and procedures for this application are also subject to Article 19 of the Rules of Universiti Kebangsaan Malaysia (Postgraduate Studies) 2026.

1) A student enrolled in a research-mode Master's programme under paragraph 3(1)*(a)* of the Regulations may apply in writing to the Dean of the Faculty for conversion from the Master's programme to a Doctoral programme, subject to the following conditions:

    a) the application is accompanied by a recommendation from the Main Supervisor or the Chairperson of the Supervisory Committee; and

    b) the application is made no later than the second semester for a full-time student and the fourth semester for a part-time student.

2) For the purpose of evaluating a student's application for conversion from a Master's programme to a Doctoral programme, an Evaluation Committee shall be established.

3) The membership of the Evaluation Committee shall comprise:

    a) the Dean of the Faculty or their representative, as Chairperson;

    b) the Head of Department or Chairperson of the Centre of Studies, or their representative;

    c) three academic staff members in the relevant field who are Professors or Associate Professors;

    d) the Main Supervisor or Chairperson of the Supervisory Committee; and

    e) one Secretary.

4) The Evaluation Committee shall be responsible for the following:

    a) evaluating the research proposal and the student's performance during the presentation session based on the criteria prescribed by the Faculty and, where the student is deemed eligible, endorsing the student's application for conversion from the Master's programme to the Doctoral programme;

b) informing the Centre for Academic Management in writing of the approval of the student's conversion of programme before the end of the third semester for a full-time student and the fifth semester for a part-time student; and

c) determining the period of study for a student who converts from a Master's programme to a Doctoral programme, which shall be calculated from the date of registration for the Master's programme.

5) The decision of the Evaluation Committee shall be final and shall not be subject to appeal.

Publication of Manuscripts by Postgraduate Students as a Requirement for Viva Voce and the Award of a Degree

This requirement is also stipulated under Article 25 of the Regulations of Universiti Kebangsaan Malaysia (Postgraduate Studies) 2026.

1. All students must meet the publication requirements as a prerequisite for submitting their dissertation or thesis for examination, as follows:

   a. Master of Science
      – One (1) article in a WoS- or Scopus-indexed journal

   b. Doctor of Philosophy
      – Two (2) articles in WoS- or Scopus-indexed journals

2. When submitting a dissertation or thesis for examination, students are required to:

   a. Complete the Dissertation/Thesis Submission Form;

   b. Pay the dissertation or thesis examination fee; and

   c. Attach evidence that the required manuscript(s) have been accepted for publication.

Article 37(1)*(d)* of the Rules of Universiti Kebangsaan Malaysia (Postgraduate Studies) 2026

Requirements for degree conferment
Students falling under paragraph 3(1)*(a)* of the Regulations shall fulfil other requirements prescribed by the Faculty.

Presentation and Attendance at the Faculty's Postgraduate Seminars

This requirement stipulates that:
Before submitting a dissertation or thesis for examination, all research-mode postgraduate students are required to:

a. Present the following:

   i. research proposal;
   ii. progress reports; and
   iii. final report.

b. Attend the Postgraduate Seminars organised by the Faculty.

(Faculty of Pharmacy Meeting dated 18 February 2013 and Special Meeting of the Faculty of Pharmacy dated 25 July 2013)

Courses Required by the Faculty and the University

This requirement is also stipulated under Articles 37(1)*(d)* and 37(1)*(e)* of the Rules of Universiti Kebangsaan Malaysia (Postgraduate Studies) 2026.

1. Candidates shall pass all courses required by the Faculty and the University for the purpose of degree conferment (these include the Malay language course for international students and the NFNP courses).

(Senate Meeting 413 dated 27 August 2015)

Master of Clinical Pharmacy Programme

Introduction

Clinical Pharmacy is one of the rapidly developing areas of pharmacy. Clinical pharmacy is a pharmacy discipline which applies clinical skills in the practice of pharmacy and pharmaceutical care. This postgraduate course is designed to prepare pharmacists for the provision of high-level clinical pharmacy services in a range of practice settings. The course will provide an opportunity for students to acquire specialised knowledge and skills in clinical pharmacy practice and pharmacotherapy.

Objectives

The objectives of the programme (PEO) are to produce:

PEO 1 Scholars who master advanced knowledge, as well as pharmacotherapy, digital, and numeracy skills in the field of clinical pharmacy, in line with the needs of the profession and industry developments.

PEO2 Scholars who demonstrate leadership, autonomy, accountability, and communication skills.

PEO3 Scholars who possess lifelong learning skills and an entrepreneurial mindset in solving challenges related to the field of clinical pharmacy.

PEO4 Scholars who uphold ethics, integrity, and professionalism in carrying out their responsibilities in the field of clinical pharmacy.

Total Units

The total compulsory units set for this programme is 40 units.

PROGRAMME LEARNING OUTCOMES (PLOs) FOR MASTER OF CLINICAL PHARMACY

The Master of Clinical Pharmacy programme aims to produce graduates who are able to:

PLO1	Master advanced knowledge and understanding related to the field of clinical pharmacy.
PLO2	Analyse complex problems in the field of clinical pharmacy critically and creatively.
PLO3	Apply practical skills in tackling issues related to the field of clinical pharmacy.
PLO4	Demonstrate collaboration with individuals in diverse learning and work communities within clinical settings.
PLO5	Demonstrate skills in communicating effectively with both the scientific community and the general public in the field of clinical pharmacy.
PLO6	Apply appropriate digital technologies and analytical techniques for solving problems in the field of clinical pharmacy.
PLO7	Utilise numerical and graphical skills to solve problems in the field of clinical pharmacy.
PLO8	Demonstrate leadership, intellectual qualities, teamwork, autonomy, and accountability in executing tasks.
PLO9	Demonstrate a commitment to lifelong learning and self-development.
PLO10	Demonstrate entrepreneurial qualities relevant to clinical pharmacy practice.
PLO11	Comply with legal, ethical, professional, and sustainability standards.

Curriculum for the Master of Clinical Pharmacy

Full-Time Studies:
Semester I

Code	Course Title (Theory & Research Courses)	Unit
NFNK6312	Advanced Pharmacotherapy I	2
NFNK6332	Research Methodology and Biostatistics	2
NFNK6352	Advanced Clinical Pharmacy Practise	2
NFNK6372	Approaches to Clerkship and Clinical Case Management	2
NFNK6392	Clinical Research Project I	2
	Total credits	**10**

Code	Course Title (Compulsory Clerkship)*	Unit
	**Note: Choose two compulsory clerkship courses*	
NFNK6413	Pharmacotherapy Clerkship in Internal Medicine I	3
NFNK6423	Pharmacotherapy Clerkship in Internal Medicine II	3
NFNK6433	Pharmacotherapy Clerkship in Critical Care	3
NFNK6443	Pharmacotherapy Clerkship in Paediatric	3
	Total credits	**6**

Code	Course Title (Elective Clerkship)*	Unit
	**Note: Choose one elective clerkship course*	
NFNK6512	Pharmacotherapy Clerkship in Obstetrics and Gynaecology	2
NFNK6522	Pharmacotherapy Clerkship in Psychiatry	2
NFNK6532	Clinical Pharmacokinetic Clerkship	2
NFNK6542	Pharmacotherapy Clerkship in Oncology and Nuclear Pharmacy	2
NFNK6552	Pharmacotherapy Clerkship in Surgery and Parenteral Nutrition	2
NFNK6562	Drug Information Services Clerkship	2
NFNK6572	Review on Patient Medication Management Clerkship	2
	Total credits	**2**

Total credits for Semester I = 18 units

Full-Time Studies:
Semester II

Code	Course Title (Theory & Research Courses)	Unit
NFNK6322	Advanced Pharmacotherapeutics II	2
NFNK6342	Advanced Pharmacotherapeutics III	2
NFNK6362	Individualised Pharmacotherapy	2
NFNK6382	Clinical Practice in Community Pharmacy	2
NFNK6326	Clinical Research Project II	6
	Total credits	**14**

Code	Course Title (Compulsory Clerkship)*	Unit
	**Note: Choose two compulsory clerkship courses*	
NFNK6413	Pharmacotherapy Clerkship in Internal Medicine I	3
NFNK6423	Pharmacotherapy Clerkship in Internal Medicine II	3
NFNK6433	Pharmacotherapy Clerkship in Critical Care	3
NFNK6443	Pharmacotherapy Clerkship in Paediatric	3
	Total credits	**6**

Code	Course Title (Elective Clerkship)*	Unit
	**Note: Choose one elective clerkship course*	
NFNK6512	Pharmacotherapy Clerkship in Obstetrics and Gynecology	2
NFNK6522	Pharmacotherapy Clerkship in Psychiatry	2
NFNK6532	Clinical Pharmacokinetic Clerkship	2
NFNK6542	Pharmacotherapy Clerkship in Oncology and Nuclear Pharmacy Clerkship	2
NFNK6552	Pharmacotherapy Clerkship in Surgery and Parenteral Nutrition	2
NFNK6562	Drug Information Services Clerkship	2
NFNK6572	Review on Patient Medication Management Clerkship	2
	Total credits	**2**

Total credits for Semester II = 22 units

OVERALL TOTAL CREDITS = 40 UNITS

Part-Time Studies:

For part-time study, the standard period to complete the programme is two (2) years. In each semester, a part-time student is allowed to register not more than:
(i) twelve (12) credits, OR
(ii) three (3) courses

Recommended course registration in the first year:

Semester I

Theory courses x 3	6 units
Compulsory clerkship x 1	3 units
Total credits	**9 units**

Semester II

Theory courses x 3	6 units
Compulsory clerkship x 1	3 units
Elective clerkship x 1	2 units
Total credits	**11 units**

Total credit for Year I = 20 units

Recommended course registration in the second year:

Semester I

Theory courses x 1	2 units
Compulsory clerkship x 1	3 units
Elective clerkship x 1	2 units
Research project I	2 units
Total credits	**9 units**

Semester II

Theory courses x 1	2 units
Compulsory clerkship x 1	3 units
Research project II	6 units
Total credits	**11 units**

Total credits for Year II = 20 units

OVERALL TOTAL CREDITS = 40 UNITS

University Compulsory Course

(a) For foreign candidates with no knowledge and basic skills in Malay language or Malay language is not the main language of the candidate (national language or official language):

Code	**Course Title**	**Unit**
LMCM1083	Bahasa Melayu Komunikasi Antarabangsa	3

(b) For foreign candidates from Singapore, Brunei Darussalam, Indonesia and southern Thailand:

Code	**Course Title**	**Unit**
LMCM1093	Bahasa Melayu Untuk Pelajar Nusantara	3

Synopses of Courses for Master of Clinical Pharmacy

Core Courses (Theory)

NFNK6312 Advanced Pharmacotherapeutics I

This course contains lectures and problem-based learning. Students will cover management of related illnesses in terms of pathophysiology / pathogenesis, clinical signs and symptoms, latest evidence-based pharmacotherapy treatments, individualized treatment of choice, treatment effectiveness, monitoring methods and related side effects, and non-pharmacological management. The areas covered in this course are cardiology, respiratory, nephrology and neurology.

Recommended Reading

Chisholm-Burns, M.A., et al. 2026. *Pharmacotherapy Principles & Practice*. 7th Edition. New York: McGraw-Hill.

DiPiro, J.T., et al. 2023. *DiPiro's Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. New York: McGraw-Hill.

Stoner, N., Mitchell, M. & Dunsmure, L. 2025. *Oxford Handbook of Clinical Pharmacy*. 4th Edition. Oxford: Oxford University Press.

Whittlesea, C. & Hodson, K. 2026. *Clinical Pharmacy and Therapeutics*. 7th Edition. Edinburgh: Elsevier.

Zeind, C.S., et al. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. 12th Edition. Philadelphia: Wolters Kluwer.

NFNK6322 Advanced Pharmacotherapy II

This course contains lectures and problem-based learning. Students will cover management of related illnesses in terms of pathophysiology / pathogenesis, clinical signs and symptoms, latest evidence-based pharmacotherapy treatments, individualized treatment of choice, treatment effectiveness, monitoring methods and related side effects, and non-pharmacological management. The areas covered in this course are endocrinology, wound management, gastroenterology, obstetric and gynaecology, dermatology, nuclear pharmacy and rheumatology.

Recommended Reading

Arcangelo, V.P., Peterson, A.M., Wilbur, V.F., & Reinhold, J.A. 2022. *Pharmacotherapeutics for Advanced Practice: A Practical Approach*. 5th Edition. Philadelphia: Wolters Kluwer.

Chisholm-Burns, M.A., Schwinghammer, T.L., Malone, P.M., Kolesar, J.M., Lee, K.C., & Bookstaver, P.B. 2022. *Pharmacotherapy Principles & Practice*. New York: McGraw Hill.

DiPiro, J.T., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L., & Posey, L.M. 2023. *DiPiro's Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. New York: McGraw Hill.

Schwinghammer, T.L., Koehler, J.M., & Borchert, J.S. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill Education.

Zeind, C.S., Carvalho, M.G., Cheng, J.W.M., Zaiken, K., & LaPointe, T. 2024. A*pplied Therapeutics: The Clinical Use of Drugs*. 12th Edition. Philadelphia: Wolters Kluwer Health.

NFNK6332 Research Methodology and Biostatistics

This course contains lecture sessions and workshops. Students will be exposed to the principles of epidemiology, the development of research methodologies that cover a wide range of research designs, types of sampling and bias methods, and statistics including types of data, sample size determination and study power, types of statistical analysis and selection of statistical analysis appropriate to the study.

Recommended Reading

Aguinis, H., 2025. *Research Methodology: Best Practices for Rigorous, Credible and Impactful Research*. California: Sage Publications Inc.

Creswell, J.W. & Guetterman, T.C. 2025. *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. 7th Edition. Harlow, Essex: Pearson Education Limited.

Fabricant, P.D. 2024. *Practical Clinical Research Design and Application: A Primer for Physicians, Surgeons, and Clinical Healthcare Professionals*. Cham: Springer.

Johnson, R.B. & Christensen, L.B. 2025. *Educational Research: Quantitative, Qualitative, and Mixed Approaches*. 8th Edition. Thousand Oaks, California: Sage Publications Inc.

Rossi, R.J. 2022. *Applied Biostatistics for the Health Sciences*. 2nd Edition. Hoboken, NJ: Wiley.

NFNK6342 Advanced Pharmacotherapeutics III

This course contains lectures and problem-based learning. Students will cover management of related illnesses in terms of pathophysiology / pathogenesis, clinical signs and symptoms, latest evidence-based pharmacotherapy treatments, individualized treatment of choice, treatment effectiveness, monitoring methods and related side effects, and non-pharmacological management. The areas covered in this course are infectious, immunological and oncological diseases.

Recommended Reading

Chisholm-Burns, M.A., Schwinghammer, T., Malone, P., Kolesar, J., Lee, K.C. & Bookstaver, P.B. 2025. *Pharmacotherapy Principles & Practice*. 7th Edition. New York: McGraw-Hill Medical.

DiPiro, J.T., Schwinghammer, T.L., Ellingrod, V. & Holle, L.M. 2026. *DiPiro's Pharmacotherapy Handbook*. 13th Edition. New York: McGraw-Hill Education.

Haines, S.T., Nolin, T.D., Ellingrod, V.L., Cocohoba, J., Holle, L.M. & Posey, L.M. 2026. *DiPiro's Pharmacotherapy: A Pathophysiologic Approach*. 13th Edition. New York: McGraw-Hill Medical.

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill Medical.

Zeind, C.S., Carvalho, M.G., Cheng, J.W.M., Zaiken, K. & LaPointe, T. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. 12th Edition. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.

NFNK6352 Advanced Clinical Pharmacy Practise

In this course, students will be trained in the applications of clinical pharmacy concepts and advanced pharmacy practice skills. Discussion will also cover the applications of pharmaceutical care concepts in specialized pharmacy services, communication skills, and the management of drug and poison information.

Recommended Reading

da Costa, F.A., Foppe can Mil, J.W. & Alvarez-Risco, A. 2018. *The Pharmacist Guide to Implementing Pharmaceutical Care*. Springer. (Main Reference)

DiPiro, J.T., Yee, G.C. & Posey, L.M. 2019. *Pharmacotherapy: A Pathophysiologic Approach*. 11th Edition. New York: McGraw-Hill Medical. (Main Reference)

Tietze, K.J. 2012. *Clinical Skills for Pharmacists: A Patient-Focused Approach*. 3rd Edition. Elsevier. (Main Reference)

Walker, R. & Whittlesea, C. 2018. *Clinical Pharmacy and Therapeutics*. 6th Edition. Edinburgh: Churchill Livingstone/Elsevier. (Main Reference)

Warholak, T.L. & Nau, D.P. 2010. *Quality and Safety in Pharmacy Practice*. New York: McGraw-Hill Medical. (Main Reference)

NFNK6362 Individualised pharmacotherapy

This course contains lectures and problem-based learning. Students will be trained to master the latest clinical pharmacokinetic and pharmacodynamic concepts and apply in pharmaceutical care. Students will be trained in individual patient disease management to optimize treatment effects. The service delivery process is discussed in terms of assessment of clinical status of patients, drug selection and target plasma/serum drug concentrations, designing dosing regimens, interpreting drug concentrations in plasma/serum, dose modification process and treatment regimen recommendations.

Recommended Reading

Amponsah, S.K. & Pathak, Y.V. (eds.) 2022. *Recent Advances in Therapeutic Drug Monitoring and Clinical Toxicology*. Cham: Springer.

Beringer, P.M. 2019. *Winter's Basic Clinical Pharmacokinetics*. 6th Edition. Philadelphia: Wolters Kluwer. (Main Reference)

Curry, S.H. & Whelpton, R. 2022. *Drug Disposition and Pharmacokinetics: From Principles to Applications*. 2nd Edition. Hoboken, NJ: John Wiley & Sons.

Dasgupta, A. (ed.) 2024. *Therapeutic Drug Monitoring: Newer Drugs and Biomarkers*. 2nd Edition. London: Academic Press/Elsevier.

Murphy, J.E. 2021. *Clinical Pharmacokinetics*. 7th Edition. Bethesda, MD: American Society of Health-System Pharmacists.

NFNK6372 Approaches to Clerkship and Clinical Case Management

This course trains students in systematic clerical processes and effective clinical case management. Topics covered include ethics and professional image, clinical pharmacist professional relationship with patients and other health professionals, diversity of laboratory and clinical data, clinical and medical data collection, clinical case documentation, evidence-based practice application and value in patient drug treatment, drug therapy planning and monitoring, patient education needs, and clinical approaches for specific populations such as intensive care, pediatrics, obstetric and gynecology (O&G).

Recommended Reading

Brown, T. & Shah, S. 2013. *Evidence-Based Clinical Reasoning in Medicine*. Shelton: People's Medical Pub. House-USA. (Main Reference)

Chisholm-Burns, M.A., et al. 2022. *Pharmacotherapy Principles & Practice*. 6th Edition. New York: McGraw-Hill Medical.

DiPiro, J.T., Yee, G.C. & Posey, L.M. 2023. *Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. New York: McGraw-Hill Medical.

Pagano, M.P. 2016. *Health Communication for Health Care Professionals: An Applied Approach*. New York: Publisher Springer Publishing Co Inc. (Main Reference)

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill Medical.

NFNK6382 Clinical Practice in Community Pharmacy

Students will be trained to integrate the concept of clinical pharmacy in community pharmacy practice. The discussions will also include application of pharmaceutical care in community pharmacy services, counselling skills, minor ailments that require consultations from a community pharmacist and the general management of community pharmacy.

Recommended Reading

Beardsley, R.S., Skrabal, M.Z. & Kimberlin, C.L. 2020. *Communication Skills in Pharmacy Practice*. 7th Edition. Philadephia: Lippincott Williams & Wilkins. (Main Reference)

da Costa, F.A., van Mil, J.W.F. & Alvarez-Risco, A. 2019. *The Pharmacist Guide to Implementing Pharmaceutical Care*. Switzerland: Springer. (Main Reference)

Pharmaceutical Services Division, Ministry of Health Malaysia. 2015. *Community Pharmacy Benchmarking Guideline*. 2nd Edition. Malaysia. (Main Reference)

Rutter, P. 2026. *Community Pharmacy: Symptoms, Diagnosis and Treatment*. 4th Edition. London: Elsevier

Schommer, J.C. & Olson, A.W. 2019. *Pharmacist Services*. Switzerland: MDPI. (Main Reference)

Core Courses (Research)

NFNK6392 Clinical Research Project I

The Clinical Research Project I includes literature search, preparation and presentation of research proposals, pilot studies and preliminary data collection. The topics of research should cover the practical field of clinical pharmacy or pharmacotherapy. The results of this study are expected to improve pharmaceutical practices or current drug treatment methods. Students will be supervised by an assigned lecturer.

NFNK6326 Clinical Research Project II

The Clinical Research Project II literature search, data collection, data analysis, dissertation writing, presentation of research findings and oral examinations. The topics of research should cover the practical field of clinical pharmacy or pharmacotherapy. The results of this study are expected to improve pharmaceutical practices or current drug treatment methods. Students will be supervised by an assigned lecturer. Students also need to produce a manuscript for publication purposes.

Recommended Reading

Gaya UKM 2015. https://www.ukm.my/pusatsiswazah/wp-content/uploads/2021/02/2015-GayaUKM-BI-Final.pdf (Main Reference)

Greenhalgh, T. & Dijkstra, P. 2014. *How to Read a Paper: The Basics of Evidence-Based Medicine and Healthcare*. 5th Edition. West Sussex: Wiley-Blackwell/BMJ Books. (Main Reference)

von Elm, E., et al. 2007. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *BMJ* 335: 806. https://www.strobe-statement.org/checklists/ (Main Reference)

Walliman, N. 2020. *Your Research Project. Designing and Planning Your Work*. 4th Edition. Sage Publications. (Main Reference)

Current journals and clinical guidelines related to the research area.

Core Courses (Compulsory Clerkship)

NFNK6413 Pharmacotherapy Clerkship in Internal Medicine I

This course consists of a series of ward rounds, bedside teaching, discussion and clinical cases presentation. Students will be trained in pharmacotherapy management for patients in the wards. New theories and knowledge from the latest literature search will be applied in evidence-based patient management. Students will also be trained to identify and manage potential or actual issues of pharmaceutical care. In addition, the skills of clinical cases presentation (oral and in writing) will be trained. Selected clinical cases will cover medical problems related to cardiovascular, endocrine, dermatology, musculoskeletal and respiratory.

Recommended Reading

Chisholm-Burns, M.A., et al. 2026. *Pharmacotherapy Principles & Practice*. 7th Edition. New York: McGraw-Hill.

Matthias, K.R., et al. 2023. *Pharmacotherapy Principles and Practice Study Guide: A Case-Based Care Plan Approach*. 6th Edition. New York: McGraw-Hill.

Schwinghammer, T.L., et al. 2023. *Schwinghammer's Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill

Stoner, N., Mitchell, M. & Dunsmure, L. 2025. *Oxford Handbook of Clinical Pharmacy*. 4th Edition. Oxford: Oxford University Press.

Whittlesea, C. & Hodson, K. 2026. *Clinical Pharmacy and Therapeutics*. 7th Edition. Edinburgh: Elsevier.

Current journals – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

NFNK6423 Pharmacotherapy Clerkship in Internal Medicine II

This course consists of a series of ward rounds, bedside teaching, discussion and clinical cases presentation. Students will be trained in pharmacotherapy management for patients in the wards. New theories and knowledge from the latest literature search will be applied in evidence-based patient management. Students will also be trained to identify and manage potential or actual issues of pharmaceutical care. In addition, students will be trained in skills involving writing and oral presentation of clinical cases. Selected cases will cover renal, gastrointestinal, infection, haematology, and neurology.

Recommended Reading

DiPiro, J.T., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, B.G. & Posey, L.M. 2023. *Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. USA: McGraw-Hill Education.

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill Medical.

Whittlesea, C. & Hodson, K. 2019. *Clinical Pharmacy and Therapeutics*. 6th Edition. Oxford: Elsevier. (Main Reference)

Zeind, C.S. & Carvalho, M.G. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. 12th Edition. Vancouver: Applied Therapeutics.

Current journals – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

NFNK6433 Pharmacotherapy Clerkship in Critical Care

This course will include ward rounds, bed-teaching, discussion and presentation of clinical cases. Students will be trained in the management of pharmacotherapy for patients in the ward. New theoretical knowledge and from the search for the latest literature will be applied to evidence-based patient management. Students will also be trained in identifying and managing potential or actual pharmaceutical issues. In addition, oral and written clinical case management skills will also be trained. Selected clinical cases will include problems related to infection, shock, acute organ failure, sedation and anesthesia.

Recommended Reading

Chisholm-Burns, M.A., Schwinghammer, T.L., Malone, P.M., Kolesar, J.M., Lee, K.C. & Bookstaver, P.B. 2022. *Pharmacotherapy Principles & Practice*. New York: McGraw Hill.

DiPiro, J.T., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L. & Posey, L.M. 2023. *Dipiro's Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. New York: McGraw Hill.

Heiner, J.S., Gabot, M. & Elisha, S. 2025. *Emergency Management in Anesthesia and Critical Care*. St. Louis, Missouri: Elsevier.

Schwinghammer, T.L., Koehler, J.M. & Borchert, J.S. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill Education.

Vincent, J.L. et al. 2024. *Textbook of Critical Care*. 8th Edition. Netherlands: Elsevier.

NFNK6443 Pharmacotherapy Clerkship in Paediatrics

This course consists of a series of ward rounds, bedside teaching, discussion and clinical cases presentation. Students will be trained in pharmacotherapy management for patients in the wards. New theories and knowledge from the latest literature search will be applied in evidence-based patient management. Students will also be trained to identify and manage potential or actual issues of pharmaceutical care. In addition, the skills of clinical cases presentation (oral and in writing) will be trained. Selected cases will cover medical problems related to internal medicine in neonates, infants and pediatrics.

Recommended Reading

DiPiro, J.T., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, B.G. & Posey, L.M. 2023. *Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. USA: McGraw-Hill Education.

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill Medical.

Whittlesea, C. & Hodson, K. 2019. *Clinical Pharmacy and Therapeutics*. 6th Edition. Oxford: Elsevier. (Main Reference)

Zeind, C.S. & Carvalho, M.G. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. 12th Edition. Vancouver: Applied Therapeutics.

Current journals – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

Elective Courses (Elective Clerkship)

NFNK6512 Pharmacotherapy Clerkship in Obstetrics and Gynecology

This course consists of a series of ward rounds, bedside teaching, discussion and clinical cases presentation. Students will be trained in pharmacotherapy management for patients in the wards. New theories and knowledge from the latest literature search will be applied in evidence-based patient management. Students will also be trained to identify and manage potential or actual issues of pharmaceutical care. In addition, students will be trained in skills involving writing and oral presentation of clinical cases. Selected cases will cover issues related to obstetrics and gynecology.

Recommended Reading

Mattison, D.R. & Halbert, L.A. (eds.) 2022. *Clinical Pharmacology During Pregnancy*. 2nd Edition. London: Academic Press/Elsevier.

O'Connell, M.B., Smith, J.A. & Borgelt, L.M. (eds.) 2023. *Women's Health Across the Lifespan: A Pharmacotherapeutic Approach*. 3rd Edition. New York: McGraw-Hill.

Stoner, N., Mitchell, M. & Dunsmure, L. 2025. *Oxford Handbook of Clinical Pharmacy*. 4th Edition. Oxford: Oxford University Press.

Towers, C.V., Forinash, A.B., Brusseau, C.A. & Briggs, G.G. 2026. *Briggs Drugs in Pregnancy and Lactation: A Reference Guide to Fetal and Neonatal Risk*. 13th Edition. Philadelphia: Wolters Kluwer.

Current journals – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

NFNK6522 Pharmacotherapy Clerkship in Psychiatry

This course consists of a series of ward rounds, bedside teaching, discussion and clinical cases presentation. Students will be trained in pharmacotherapy management in psychiatry for patients in the wards. New theories and knowledge from the latest literature search will be applied in evidence-based patient management. Students will also be trained to identify and manage potential or actual issues of pharmaceutical care. In addition, the skills of clinical cases presentation (oral and in writing) will be trained. Selected cases will cover medical problems related to anxiety, schizophrenia, depression and bipolar disorder.

Recommended Reading

DiPiro, J.T., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L. & Posey, L.M. 2023. *DiPiro's Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. New York: McGraw Hill.

Schwinghammer, T.L., Koehler, J.M., Borchert, J.S., Slain, D. & Park, S.K. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill Medical.

Wells, B.G., DiPiro, T.T., Schwinghammer, T.L. & DiPiro, C.V. 2017. *Pharmacotherapy Handbook*. 10th Edition. USA: McGraw-Hill Education. (Main Reference)

Whittlesea, C. & Hodson, K. 2019. *Clinical Pharmacy and Therapeutics*. 6th Edition. Oxford: Elsevier. (Main Reference)

Zeind, C.S. & Carvalho, M.G. 2023. *Applied Therapeutics: The Clinical Use of Drugs*. 12th Edition. Philadelphia: Wolters Kluwer.

NFNK6532 Clinical Pharmacokinetic Clerkship

Students will be trained in the management of pharmacotherapy for patients in the ward. The theoretical knowledge and from the literature search will be applied to evidence-based patient management. Students will also be trained in identifying and managing potential or actual pharmaceutical issues. In addition, oral and written clinical case management skills will also be trained. The selected clinical cases will include pharmacokinetic issues related to poor drug absorption, distribution and saturated excretion.

Recommended Reading

Beringer, P.M. 2025. *Winter's Basic Clinical Pharmacokinetics*. 7th Edition. Philadelphia: Wolters Kluwer.

Brunton, L.L. & Knollmann, B.C. 2023. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*. 14th Edition. New York: McGraw Hill.

DiPiro, J.T., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L. & Posey, L.M. 2023. *Dipiro's Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. New York: McGraw Hill.

Ducharme, M.P. & Shargel, L. 2022. *Applied Biopharmaceutics & Pharmacokinetics*. 8th Edition. New York: McGraw Hill.

Zeind, C.S., Carvalho, M.G., Cheng, J.W., Zaiken, K. & LaPointe, T. 2024. *Applied Therapeutics: The Clinical Use of Drugs*. 12th Edition. Philadelphia: Wolters Kluwer Health.

NFNK6542 Pharmacotherapy Clerkship in Oncology and Nuclear Pharmacy

This course consists of a series of ward rounds, bedside teaching, discussion and clinical cases presentation. Students will be trained in pharmacotherapy management for patients in the wards. New theories and knowledge from the latest literature search will be applied in evidence-based patient management. Students will also be trained to identify and manage potential or actual issues of pharmaceutical care. In addition, students will be trained in skills involving writing and oral presentation of clinical cases. Selected cases will cover cancer and nuclear pharmacy.

Recommended Reading

Chisholm-Burns, M.A., et al. 2026. *Pharmacotherapy Principles & Practice*. 7th Edition. New York: McGraw-Hill.

Matthias, K.R., et al. 2023. *Pharmacotherapy Principles and Practice Study Guide: A Case-Based Care Plan Approach*. 6th Edition. New York: McGraw-Hill.

Schwinghammer, T.L., et al. 2023. *Schwinghammer's Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill.

Stoner, N., Mitchell, M. & Dunsmure, L. 2025. *Oxford Handbook of Clinical Pharmacy*. 4th Edition. Oxford: Oxford University Press.

Whittlesea, C. & Hodson, K. 2026. *Clinical Pharmacy and Therapeutics*. 7th Edition. Edinburgh: Elsevier.

Current journals – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

NFNK6552 Pharmacotherapy Clerkship in Surgery and Parenteral Nutrition

This course consists of a series of ward rounds, bedside teaching, discussion and clinical cases presentation. Students will be trained in pharmacotherapy management parenteral nutrition support for patients in the wards. New theories and knowledge from the latest literature search will be applied in evidence-based patient management. Students will also be trained to identify and manage potential or actual issues of pharmaceutical care. In addition, the skills of clinical cases presentation (oral and in writing) will be trained. Selected cases will cover medical problems related to gastrointestinal tract, genitourinary, orthopaedic and neurology. Cases will also cover problems related to parenteral nutrition requirements in surgical patients.

Recommended Reading

Cheah, F.C. 2022. *Evidence-Based Clinical Practice in Feeding the Preterm Infant*. Bangi: Penerbit Universiti Kebangsaan Malaysia.

Chisholm-Burns, M.A., et al. 2022. *Pharmacotherapy Principles & Practice*. New York: McGraw Hill.

DiPiro, J.T., et al. 2023. *Dipiro's Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. New York : McGraw-Hill.

Katz, D.L. 2022. *Nutrition in Clinical Practice*. 4th Edition. Philadelphia: Wolters Kluwer.

Wiffen, P., et al. 2017. *Oxford Handbook of Clinical Pharmacy*. 3rd Edition. Oxford: Oxford University Press. (Main Reference)

Current journals – Clinical Nutrition, Journal of Parenteral and Enteral Nutrition, Hospital Pharmacy, International Journal of Clinical Pharmacy

NFNK6562 Drug Information Services Clerkship

This course trains students on the systematic process of clerkship and effective management of clinical cases. Topics covered include information sources, drug information enquiries, the process of literature evaluation to answer drug information enquiries, evidence-based information in formulating accurate suggestions and recommendations, professional communication, medication use review (MUR) and ADR reporting at pharmacy settings. In addition, students will also be trained for oral case presentation and documentation for cases related to drug information.

Recommended Reading

Gabay, M. 2016. *The Clinical Practice of Drug Information*. Jones & Bartlett Learning. (Main Reference)

Kier, K. & Goldwire, M. 2018. *Drug Information Resources and Literature Retrieval*. 7th Edition. ACCP's Pharmacotherapy Self-Assessment Program. (Main Reference)

Malone, P., Meghan, M. & Park, S. 2022. *Drug Information: A Guide for Pharmacists*. 6th Edition. McGraw-Hill Education.

Schwinghammer, T.L. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. 10th Edition. New York: McGraw-Hill Medical.

Key databases such as Ovid MEDLINE, PubMed, and Cochrane.

NFNK6572 Review on Patient Medication Management Clerkship

This course contains a review of patients' medication management. It involves clinical clerkship, discussion and case presentation. Students will be trained to conduct medication management review through evaluation of patient information, assessment of medication use and recommend solutions on issues related to patients' medication use such as patient education and others. In addition, students will also be trained for clinical case presentation and documentation.

Recommended Reading

DiPiro, J.T., Talbert, R.L., Yee, G.C., Haines, S.T., Nolin, T.D., Ellingrod, V.L. & Posey, L.M. 2023. *Pharmacotherapy: A Pathophysiologic Approach*. 12th Edition. USA: McGraw-Hill Education.

Schwinghammer, T.L. Koehler, J.M. & Borchert, J.S. 2023. *Pharmacotherapy Casebook: A Patient-Focused Approach*. 12th Edition. New York: McGraw-Hill Education.

Whalen, K. & Hardin, H.C. 2018. *Medication Therapy Management: A Comprehensive Approach*. 2nd Edition. McGraw Hill Education. (Main Reference)

Zeind, C.S., Carvalho, M.G., Cheng, J.W.M., Zaiken, K. & LaPointe, T. 2024. *Applied Therapeutics: The Clinical Use of Drugs*. 12th Edition. Philadelphia: Wolters Kluwer Health.

Updated journal articles – Annals of Pharmacotherapy, Archives of Internal Medicine, Pharmacotherapy, New England Journal of Medicine, The Lancet

Master of Science (Pharmaceutical Analysis)

Introduction

The program is designed to produce skilled manpower in the field of pharmaceutical analysis in line with the development of the pharmaceutical and herbal industries in the country. Master of Science (Pharmaceutical Analysis) Programme will contribute to the generation of the required expertise in the public and private sectors by providing specialised knowledge and skills in the field of pharmaceutical analysis.

Objectives

Objectives of this programme (PEO) are to produce:

PEO1 Scholars who master advanced knowledge as well as practical, digital, and numeracy skills in fields related to pharmaceutical analysis, in line with the needs of the profession and industry developments.

PEO2 Scholars who demonstrate leadership, autonomy, accountability, and skills in communicating effectively with various stakeholders.

PEO3 Scholars who possess lifelong learning skills and an entrepreneurial mindset for solving challenges related to the field of pharmaceutical analysis.

PEO4 Scholars who uphold ethics, integrity, and professionalism in carrying out responsibilities related to the field of pharmaceutical analysis.

Total unit

The total number of compulsory units set for this programme is 40.

PROGRAMME LEARNING OUTCOMES (PLOs) FOR MASTER OF SCIENCE (PHARMACEUTICAL ANALYSIS)

The Master of Science (Pharmaceutical Analysis) programme aims to produce graduates who are able to:

PLO1 Master advanced knowledge related to the field of pharmaceutical analysis.

PLO2 Analyse complex problems in fields related to pharmaceutical analysis critically and creatively.

PLO3 Apply practical skills to address issues in fields related to pharmaceutical analysis.

PLO4 Demonstrate collaboration with individuals in diverse learning communities.

PLO5 Demonstrate skills in communicating effectively with both the scientific community and the general public in fields related to pharmaceutical analysis.

PLO6 Apply appropriate digital technologies and analytical techniques to address problems in fields related to pharmaceutical analysis.

PLO7 Utilise numerical skills, graphics, and visual aids to solve problems in fields related to pharmaceutical analysis.

PLO8 Demonstrate leadership, intellectual qualities, teamwork, autonomy, and accountability in executing tasks.

PLO9 Demonstrate a commitment to lifelong learning and self-development.

PLO10 Demonstrate entrepreneurial qualities relevant to the field of pharmaceutical analysis.

PLO11 Comply with legal, ethical, professional, and sustainability standards.

Curriculum for Master of Science (Pharmaceutical Analysis)

Programme Core Courses

Full-time studies:

The standard duration for full-time studies is one (1) year, or two (2) semesters. The courses offered in each semester are as follows:

Semester I

Code	Course Title	Unit
NFNA6613	Drug Discovery and Development	3
NFNA6713	Pharmaceutical Quality Assurance	3
NFNA6813	Pharmaceutical Dosage Design	3
NFNA6913	Biopharmaceutical Technology	3
NFNA6612	Research Methodology & Safety At Workplace	2
NFNA6712	Statistics and Chemometrics for Pharmaceutical Analysis	2
NFNA6812	Research Project I	2
	Total credits	**18**

Semester II

Code	Course Title	Unit
NFNA6624	Spectroscopic Techniques in Structure Elucidation	4
NFNA6623	Pharmaceutical Separation Methods	3
NFNA6622	Pharmaceutical Quality Control	2
NFNA6722	Halal Pharmaceuticals	2
NFNA6822	Herbal Analysis	2
NFNA6723	Bioequivalence	3
NFNA6626	Research Project II	6
	Total credits	**22**

Part-time studies:

The standard duration for part-time studies is two (2) years or four (4) semesters. The recommended course registration is as follows:

Semester I

Code	Course Title	Unit
NFNA6613	Drug Discovery and Development	3
NFNA6713	Pharmaceutical Quality Assurance	3
NFNA6612	Research Methodology & Safety At Workplace	2
NFNA6812	Research Project I	2
	Total credits	**10**

Semester II

Code	Course Title	Unit
NFNA6624	Spectroscopic Techniques in Structure Elucidation	4
NFNA6622	Pharmaceutical Quality Control	2
NFNA6723	Bioequivalence	3
	Total credits	**9**

Semester III

Code	Course Title	Unit
NFNA6813	Pharmaceutical Dosage Design	3
NFNA6913	Biopharmaceutical Technology	3
NFNA6712	Statistics and Chemometrics for Pharmaceutical Analysis	2
	Total credits	**8**

Semester IV

Code	Course Title	Unit
NFNA6623	Pharmaceutical Separation Methods	3
NFNA6722	Halal Pharmaceuticals	2
NFNA6822	Herbal Analysis	2
NFNA6626	Research Project II	6
	Total credits	**13**

University Compulsory Course

(a) For foreign candidates with no knowledge and basic skills in Malay language or Malay language is not the main language of the candidate (national language or official language):

Code	**Course Title**	**Unit**
LMCM1083	Bahasa Melayu Komunikasi Antarabangsa	3

(b) For foreign candidates from Singapore, Brunei Darussalam, Indonesia and southern Thailand:

Code	**Course Title**	**Unit**
LMCM1093	Bahasa Melayu Untuk Pelajar Nusantara	3

Synopses of Courses for Master of Science (Pharmaceutical Analysis)

NFNA6612 Research Methodology & Safety At Workplace

The purpose of this course is basic research and Occupational Safety & Health Administration (OSHA). Further discussion covers and highlights knowledge in writing literature review, proposal presentation and performing research projects, taking into consideration related health and safety aspects. Among the topics discussed include rules on dangerous chemicals, handling, storage and disposal of hazardous chemicals and safety procedures in laboratories.

Recommended Reading

Allwood, J., Ahlsen, E. & Hashim A. 2021. *Getting Started with Research: A Guide to Research Methodology*. Kuala Lumpur, Malaysia: Universiti Malaya Press.

Bhattacharya, P.K. 2021. *Research Methodology in the Health Sciences: A Quick Reference Guide*. United States: McGraw Hill.

Dane, F.C. & Carhart, E. 2023. *Evaluating Research: Methodology for People Who Need to Read Research*. 3rd Edition. United Kingdom: Sage.

Ismail, S., Mokhtar, N. & Hashim, R. 2023. *10 Step-By-Step Guides to Academic Research Proposal Writing*. Kuala Lumpur, Malaysia: IIUM Press.

Paul, J. & Criado, A.R. 2020. The art of writing literature review: What do we know and what do we need to know? *International Business Review* 29(4): 101717.

NFNA6613 Drug Discovery and Development

This course covers the general principals and strategies in discovering new drugs and developing them for the marketplace including the development of drugs from natural products. Students also will be given an overview of physical/chemical properties of drugs, their route of administrations, the importance of drug substances and drug formulations on absorption and in vivo distribution of drugs to the site of actions.

Recommended Reading

Florence, A.T. & Atwood, D. 2011. *Physicochemical Principles of Pharmacy*. 5th Edition. London: Pharmaceutical Press. (Main Reference)

Nogrady, T. & Weaver, D.F. 2005. M*edicinal Chemistry: A Molecular and Biochemical Approach*. 3rd Edition. United Kingdom: Oxford University Press. (Main Reference)

Cairns, D. 2012. *Essentials of Pharmaceutical Chemistry*. London: Pharmaceutical Press. (Main Reference)

Patrick, G.L. 2023. *An Introduction to Medicinal Chemistry*. 7th Edition. United Kingdom: Oxford University Press.

Shargel, L. & Yu, A.B.C. 2022. *Applied Biopharmaceutics and Pharmacokinetics*. 8th Edition. USA: McGraw Hill Education.

NFNA6622 Pharmaceutical Quality Control

The course consists of lectures, tutorials, practical sessions and workshops. The objectives of the course are to provide the student with the knowledge and skills in various aspects of quality control of drugs and pharmaceuticals. Emphasis is given on basic and modern instrumental techniques used in analysis of drugs in raw materials,

formulation and physiological fluids, sampling procedures, control of starting materials and finished products according to official pharmacopoeias and other standards, in-process controls on various dosage forms, stability studies and testing, environmental monitoring and control and statistical quality controls. Practical classes allow the students to apply appropriate methods for standardization, analysis and quality control on pharmaceutical raw materials and finished products according to the stated pharmacopoeial procedures.

Recommended Reading

British Pharmacopoeia Commission. 2026. *British Pharmacopoeia 2027*. London: The Stationery Office.

Bunn, G.P. (ed.) 2026. *Good Manufacturing Practices for Pharmaceuticals*. 8th Edition. United States: Drugs and the Pharmaceutical Sciences.

Pharmaceutical Inspection Co-operation Scheme (PIC/S). 2023. *Guide to Good Manufacturing Practice for Medicinal Products, PE 009-8*. Geneva: PIC/S.

Watson, D.G. 2020. *Pharmaceutical Analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists*. 5th Edition. London: Elsevier Health Sciences.

United States Pharmacopeia. 2026. *United States Pharmacopeia–National Formulary (USP–NF Online)*. Rockville, MD: United States Pharmacopeia.

NFNA6623 Pharmaceutical Separation Methods

The course will expose students to have a good understanding of the theories and applications of techniques in separation techniques and able to select appropriate techniques and analytical methods and apply the knowledge in finding practical solution. The techniques include applications of high pressure liquid chromatography, gas chromatography, supercritical fluid chromatography, electrophoresis, gas chromatography-mass spectrophotometry (GC-MS) and liquid chromatography-mass spectrophotometry (LC-MS) in the body and pharmaceutical products.

Recommended Reading

Beckett, A.H. & Stenlake, J.B. 2005. *Practical Pharmaceutical Chemistry. Part 2*. UK: Athlone Press. (Main Reference)

British Pharmacopoeia. 2026. London: British Pharmacopoeia Commission Secretariat of the Medicines and Healthcare Products Regulatory Agency.

Steen, H.H., Stig, P. & Knut, E.R. 2019. *Introduction to Pharmaceutical Chemical Analysis*. Wiley. (Main Reference)

Watson, D.G. 2017. *Pharmaceutical Analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists*. Edinburgh: Elsevier Churchill Livingstone. (Main Reference)

NFNA6624 Spectroscopic Techniques in Structure Elucidation

On completion of this course, students should have a good understanding of the theories and applications associated with advanced spectroscopic techniques including the principles, instrumentation, data interpretation and uses in pharmaceutical analysis. Students also should be able to select appropriate techniques and analytical methods and apply the knowledge in finding practical solution. The spectroscopic techniques include ultraviolet-visible, fluorescence, atomic absorption, atomic emission, infrared, Raman, nuclear magnetic resonance and mass spectroscopy. The students will also acquire advanced understanding of the applications of integrated spectroscopic

techniques for the structural elucidation of compounds in drug discovery and pharmaceutical analysis in drug development and quality control.

Recommended Reading

Beckett, A.H. & Stenlake, J.B. 2005. *Practical Pharmaceutical Chemistry. Part 2*. UK: Athlone Press. (Main Reference)

British Pharmacopoeia. 2026. London: British Pharmacopoeia Commission Secretariat of the Medicines and Healthcare Products Regulatory Agency.

Pavia, D.L., Lampman, G.M., Kriz, G.S. & Vyvyan, J.A. 2015. *Introduction to Spectroscopy*. USA: Cengage Learning. (Main Reference)

Siddiqui, A.A. 2011. *Pharmaceutical Analysis*. New Delhi: CBS Publishers. (Main Reference)

Watson, D.G. 2020. *Pharmaceutical Analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists*. Edinburgh: Elsevier Churchill Livingstone. (Main Reference)

NFNA6712 Statistics and Chemometrics for Pharmaceutical Analysis

The purpose of this course is to introduce students to the theories and applications of statistical method of analysis in pharmaceutical chemistry, able to select appropriate methods and apply the knowledge in solving problems related to statistics and chemometrics. Techniques to be learned include application of statistics (research questions and hypothesis, research design, bias, confounder, randomization, sample size calculation, descriptive and inferential statistics) and multivariate data analysis (principle component analysis (PCA), cluster analysis, classification and multivariate regression). Training in the use of computers for statistical and multivariate data analysis will be carried out using SPSS and Unscrambler®.

Recommended Reading

Dretzke, B.J. 2013. *Statistics with Microsoft Excel*. Boston: Pearson. (Main Reference)

Luna, A.S. (ed.) 2017. *Chemometrics: Methods, Applications and New Research*. UK: Nova Science Pub Inc. (Main Reference)

Montgomery, D.C. 2013. *Statistical Quality Control: A Modern Introduction*. 7th Edition. (Main Reference)

Wehrens, R. 2011. *Chemometrics with R: Multivariate Data Analysis in the Natural Sciences and Life Sciences*. Berlin: Springer. (Main Reference)

Wiley Sharif, S. 2018. *Statistics for Nonstatisticians: Basic Guide to SPSS*. Malaysia. (Main Reference)

NFNA6713 Pharmaceutical Quality Assurance

The course is aimed at providing students with knowledge and understanding of specific requirements on quality assurance and regulations in pharmaceutical and other related industries. Lectures will emphasize on principles of quality assurance, documentation and record, principles and applications of the guidelines for Good Manufacturing Practice (GMP), Good Laboratory Practice (GLP), Good Clinical Practice (GCP) and regulatory requirements for assuring quality in pharmaceutical production and related industries. Seminar sessions, workshops, organized visits and self-learning are aimed at strengthening theoretical knowledge and providing skills in various applications of quality assurance.

Recommended Reading

British Pharmacopoeia Commission. 2026. *British Pharmacopoeia 2027*. London: The Stationery Office.

Pharmaceutical Inspection Co-operation Scheme (PIC/S). 2023. *Guide to Good Manufacturing Practice for Medicinal Products, PE 009-17*. Geneva: PIC/S.

Tripathy, S. 2026. *Pharmaceutical Quality Assurance: Textbook for B.Pharm Students: Complete Guide with QA, QC, GMP & TQM Concepts*. Amazon Digital Services LLC-KDP.

World Health Organization (WHO). 2024. *Quality Assurance of Pharmaceuticals: A Compendium of Guidelines and Related Materials. Volume 2: Good Manufacturing Practices and Inspection*. 10th Edition. Geneva: World Health Organization.

United States Pharmacopeial Convention. 2026. *United States Pharmacopeia–National Formulary (USP–NF Online)*. Rockville, MD: United States Pharmacopeia.

NFNA6722 Halal Pharmaceuticals

The halal industry is growing rapidly in line with high consumer demand around the world. Starting with the food sector, halal concepts have been adopted in several other sectors such as banking, hospitality, fashion, cosmetics, and pharmaceuticals. The halal principle is no longer considered as a religious requirement but has been accepted as one of the international quality assurance services - or products. The concept of halal and toyyiban emphasizes the need to fulfill the basic or minimum halal principle of health, safety, sanitation, nourishment, risk exposure, environment, social-related aspects and others according to the needs of the situation or application. Malaysia is committed in developing the halal industry in line with the country's aspiration to become a global halal hub champion. In line with this, the pharmaceutical halal industry has also grown and the halal concept has been taken into account in pharmaceutical services. In this regard, pharmacist and pharmacy students need to be equipped with the understanding and skills related to this topic.

The main objective of this course is to enable students to understand and further elaborate on the use of halal and toyyiban concepts in pharmaceuticals, especially in the fields of practice, manufacturing and research. Students will also be explained of the misunderstanding and negative stigma of this concept. Courses will be delivered through lectures, class discussions and case studies to be shared by industry representatives. The course also focuses on learning through experience in which students will conduct research studies on the topic of pharmaceutical halal in groups and organize a seminar on the awareness of halal pharmaceuticals.

Recommended Reading

Ab Latiff, J., Zakaria, Z. & Man, S. 2024. Advancing halal vaccine certification in Malaysia: Exploring the legal status criteria of Islamic principles through fiqh rules. *Journal of Ifta and Islamic Heritage* 3(1): 1-24.

Department of Standards Malaysia. 2019. *MS 2424:2019 Halal Pharmaceuticals – General Requirements (First Revision)*. Cyberjaya, Malaysia: Department of Standards Malaysia. (Main Reference)

MdDahlal, N., Desa, R. & Zain, M.N. 2025. The Ministry of Health (MOH) Malaysia policy regarding the use of medications containing non-halal ingredients: An analysis from the Shari'ah perspective. *Halalsphere* 5(1): 35-41. https://doi.org/10.31436/hs.v5i1.104

Ministry of Health Malaysia. 2018. *Panduan Penggunaan Ubat-ubatan yang Mengandungi Unsur Tidak Halal. Program Perkhidmatan Farmasi.* Kementerian Kesihatan Malaysia. (Main Reference)

Standards and Metrology Institute for Islamic Countries (SMIIC). 2022. *OIC/SMIIC 50-1:2022 Halal Pharmaceuticals – Part 1: General Requirements*. Istanbul: SMIIC.

NFNA6723 Bioequivalence

The course consists of lectures, tutorials, case studies and problem based learning to critically analyse and review bioequivalence related method validation, bioanalytical and clinical study reports. Students should be able to give detailed explanation for in vitro and in vivo dissolution testing. On completion of the course, students should have a good understanding on multiple aspects of the latest national and international guidelines. In addition, students should be able to perform pharmacokinetic and statistical calculations, with also the ability to prepare some relevant bioequivalence centre protocols.

Recommended Reading

ASEAN. 2015. *ASEAN Guideline for the Conduct of Bioequivalence Studies*. (Main Reference)

European Medicines Agency. 2014. *Guideline on Similar Biological Medicinal Products Containing Biotechnology-Derived Proteins as Active Substance: Non-Clinical and Clinical Issues*.

Food and Drug Administration. 2026. *Statistical Approaches to Establishing Bioequivalence: Guidance for Industry*.

National Pharmaceutical Regulatory Agency. 2023. *Guidance Document and Guidelines for Registration of Biosimilars in Malaysia*. 2nd Edition.

National Pharmaceutical Regulatory Agency. 2024. *Malaysian Guideline on Bioequivalence Inspection*. 2nd Edition.

NFNA6813 Pharmaceutical Dosage Design

This course consists of two main sections: radiopharmaceutical section which emphasizes the use, dose calculation and quality control of radiopharmaceutical products and dosage design section covering various types of pharmaceutical dosage design, preformulation aspects, and packaging. Emphasis is given to the preformulation phase of pharmaceutical preparations and activities involving the processing of various forms of pharmaceutical dosages such as tablets, capsules, sheets, emulsions, gels, sterile preparations and so on.

Recommended Reading

Ansel, H.C., Popovich, N.G. & Allen, L.V.Jr. 2021. *Pharmaceutical Dosage Forms and Drug Delivery Systems*. 12th Edition. Baltimore: Lippincott Williams and Wilkins.

Aulton, M.E & Taylor, K. (eds.) 2021. *Aulton's Pharmaceutics: The Design and Manufacture of Medicines*. 6th Edition. Edinburgh: Churchill Livingstone.

British Pharmacopoeia. 2019. London: Royal Pharmaceutical Society of Great Britain. (Main Reference)

Gibson, M., 2009. Pharmaceutical Preformulation and Formulation. 2nd Edition. New York: Informa Healthcare. (Main Reference)

Theobold, A. (ed.) 2010. *Sampson's Textbook of Radiopharmacy*. 4th Edition. London: Pharmaceutical Press. (Main Reference)

NFNA6822 Herbal Analysis

The purpose of this course is to introduce students to the analysis of drugs from natural resources. Topics of study comprise of phytochemistry and quality control of crude drugs, herbal preparations and herbal products; including regulations, manufacturing and standardisation of herbal products, and tests for quality control, safety and efficacy.

Recommended Reading

British Pharmacopoeia. London: British Pharmacopoeia Commission Secretariat of the Medicines and Healthcare Products Regulatory Agency. (Main Reference)

Guidelines on Good Manufacturing Practice for Traditional Medicines and Health Supplements. 2008. Kuala Lumpur: Ministry of Health, Malaysia. (Main Reference)

Heinrich, M., Barnes, J., Prieto-Garcia, J., Gibbons, S. & Williamson, E.M. 2023. *Fundamentals of Pharmacognosy & Phytotherapy*. 4th Edition. The Netherlands: Elsevier.

List, P.H. & Schmidt, P.C. 1990. *Phytopharmaceutical Technology*. Boca Raton: CRC Press. (Main Reference)

WHO. 2011. *Quality Control Methods for Herbal Materials*. Geneva: World Health Organization. (Main Reference)

NFNA6913 Biopharmaceutical Technology

The course consists of lectures and self study. Students will be served with balanced overview of the biopharmaceutical industry, not only in terms of categorizing the products currently available, but also illustrating how these drugs are produced and brought to market. The major emphasis is placed upon polypeptide-based therapeutic agents as well as the potential of nucleic acid-based drugs. The course offers insight on latest developments within the sector, provide a greater focus upon actual commercial products thus far approved and how they are manufactured, which include substantial new sections detailing the techniques applied for biopharmaceutical assays, clinical testing challenges, and advances in genomics and proteomics will likely impact upon (bio)pharmaceutical drug development.

Recommended Reading

Beg, S. & Hasnai, M.S. 2019. *Pharmaceutical Quality by Design: Principles and Applications*. USA: Academic Press. (Main Reference)

Eibl, R. & Eibl, D. 2019. *Single-Use Technology in Biopharmaceutical Manufacture*. 2nd Edition. New York: John Wiley & Sons Ltd. (Main Reference)

ISPE Headquarters. 2023. *Baseline Guide Vol 6: Biopharmaceutical Manufacturing Facilities*. 3rd Edition. Washington DC: ISPE.

Katzung, B.G., Masters, S.B. & Trevor, A.J. 2023. *Basic and Clinical Pharmacology*. 16th Edition. New York: McGraw-Hill Medical.

Walsh, G. 2003. *Biopharmaceuticals: Biochemistry and Biotechnology*. 2nd Edition. New York: Wiley-Blackwell. (Main Reference)

NFNA6812 Research Project I

This course will expose the students to the principles of designing and conducting research projects, interpreting and analysing data and project paper writing. The research project is laboratory-based in pharmaceutical analysis. The students will conduct the research project over two semesters under the supervision of lecturers. The course activities include the presentation of a research proposal and lab works.

Recommended Reading

Panduan Penulisan Tesis Gaya UKM 2015. 3rd Edition. Bangi: Pusat Pengajian Siswazah, Universiti Kabangsaan Malaysia. (Main Reference)

Rowe, P. 2016. *Essential Statistics for the Pharmaceutical Sciences*. Oxford: John Wiley & Sons. (Main Reference)

Yadav, S., Rawal, G. & Baxi, M. 2016. Plagiarism - A serious scientific misconduct. *International Journal of Health Sciences and Research* 6(2): 364-366. (Main Reference)

Journals related to the field of research.

Books related to the field of research.

NFNA6626 Research Project II

This course will expose the students to the principles of designing and conducting research projects, interpreting and analysing data and project paper writing. The research project is laboratory-based in pharmaceutical analysis. The students will conduct the research project under the supervision of lecturers. The course activities include project paper writing, presentation of results and viva.

Recommended Reading

Panduan Penulisan Tesis Gaya UKM 2015. 3rd Edition. Bangi: Pusat Pengajian Siswazah, Universiti Kabangsaan Malaysia. (Main Reference)

Rowe, P. 2016. *Essential Statistics for the Pharmaceutical Sciences*. Oxford: John Wiley & Sons. (Main Reference)

Yadav, S., Rawal, G. & Baxi, M. 2016. Plagiarism - A serious scientific misconduct. *International Journal of Health Sciences and Research* 6(2): 364-366. (Main Reference)

Journals related to the field of research.

Books related to the field of research.

Varsiti Kita

Lihat kampusku yang tenang
Damainya alam ciptaan Tuhan
Panduan ilmu dan keimanan
Amal dan jernih digabungkan
Lautan ilmu kita harumkan
Sumber ilmuwan berkembangan

Inilah varsiti kita
Ditengahkan hasrat rakyat kita
Dari mula untuk semua
Bagai tanda perjuangan kita

Bangun berbakti membela
Memupuk insan jiwa bertakwa
Memimpin manusia semua
Kenal akan adat unggulnya
Membina Negara senantiasa
Maju berilmu dan bahagia

Inilah varsiti kita
Ditengahkan hasrat rakyat kita
Dari mula untuk semua
Bagai tanda perjuangan kita

Penggubah
Nazri bin Ahmad

Ilmu, Mutu dan Budi

Ilmu, Mutu dan Budi
Itulah harga diri
Hidup siswa siswi
Harapan ibu pertiwi

Ilmu, Mutu dan Budi
Itulah pelita hati
Asas pembinaan peribadi
Untuk menabur bakti

Itulah pegangan hidup kami
Sumber kekuatan rohani
Mutiara peradaban asli
Titian hidup abadi

Ilmu, Mutu dan Budi
Itulah pusaka sejati
Menuju cita-cita murni
Semoga Tuhan memberkati

Penggubah
Zubir bin Ali

Lirik
Haji Salleh bin Hj.Yusof

Jawatankuasa Penerbitan Buku Panduan Siswazah
Fakulti Farmasi
Sesi Akademik 2026-2027

Penasihat
Prof. Dr. Mohd Makmor Bakry
Dekan

Pengerusi
Prof. Madya Dr. Ernieda Md Hatah
Timbalan Dekan (Akademik)

Ahli Jawatankuasa
Prof. Madya Dr. Adyani binti Md Redzuan
Penolong Dekan (Kualiti dan Strategi)

Dr. Shamin Mohd Saffian
Penolong Dekan (Keusahawanan)

Dr. Mohd Kaisan Mahadi
Penolong Dekan (Pengajaran & Citra)

Dr. Chua Eng Wee
Ketua Program Siswazah

Prof. Madya Dr. Chong Wei Wen
Penyelaras Program Sarjana Farmasi Klinikal

Prof. Madya Dr. Juriyati Jalil
Penyelaras Program Sarjana Sains (Analisis Farmaseutikal)

Dr. Syaratul Dalina Yusoff
Penyelaras Program Siswazah (Penyelidikan)

Setiausaha
Encik Thohir Hasim
Penolong Pendaftar

Puan Noor Azlin Bolki
Pembantu Tadbir (P/O)

Reka Bentuk
Dr. Shamin Mohd Saffian
Penolong Dekan (Keusahawanan)

Dr. Nur Vaizura Mohamad
Penyelaras Komunikasi Strategik