



Panduan Akademik **Academic Guideline**

Fakulti Sains & Matematik **Faculty of Science and Mathematics**

Program Sarjana Muda **Degree Programmes**

Kemasukan Semester 1 **Sesi 2023/2024 (A231)**

fsm
23/24

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JABATAN FIZIK (PHYSICS DEPARTMENT)

Directory of Expertise:

*List of academic staff of the
Physics Department*

Bachelor of Education
(Physics) with Honours:

- *Program Structure*
 - *Course Distribution*
 - *English Language*
 - *Teaching Practice*
-

CONTACT ADDRESS:

Department of Physics

Aras 1, Blok 4, Fakulti Sains dan Matematik
Kampus Sultan Azlan Shah
Universiti Pendidikan Sultan Idris
35900 Tanjong Malim
Perak



JABATAN FIZIK (PHYSICS DEPARTMENT)



KETUA JABATAN/
HEAD OF DEPARTMENT
Dr. Mohd. Faudzi Umar

Ph.D (UPM), M.Sc. (UKM), B.Sc. (Hons) (UKM)

☎ : 015-48797388
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Kepakaran/Expertise:

Fizik Teori, Fizik Quantum
(Theoretical Physics, Quantum Physics)



Profesor Dr. Suriani Abu Bakar

Ph.D (UITM), M.Sc. (UTM), B.Sc. (UTM)

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Kepakaran/Expertise:

Bahan berkaitan Karbon, Nanotub Karbon, Grafen, Nanostruktur Oksida
(Carbon Nanotubes, Graphene, Oxide Nanostructure)



Prof. Madya Dr. Faridah Lisa Supian

Ph.D (Sheffield), M.Sc. (USM), B.Sc. (Hons) (UKM)

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Kepakaran/Expertise:

Fizik Kimia, Langmuir-Blodgett, Kaliksarena, Polisiloksana, Fizik Keadaan Pepejal
(Chemical Physics, Langmuir-Blodgett, Calixarene, Polysiloxanes, Solid State Physics)



Prof. Madya Ts. Dr. Shahrul Kadri Ayop

Ph.D (Hokkaido), M.Sc. (Leipzig), B.Sc. (Hons) (UTM)

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Kepakaran/Expertise:

Manipulasi dan Pemerangkapan Optik; Pendidikan Fizik
(Optical Trapping and Manipulation; Physics Education)



Prof. Madya Dr. Tho Siew Wei

Ph.D (HKIEd), M.Ed. (UPSI), B.Ed. (Hons) (UPSI)

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Kepakaran/Expertise:

Pendidikan Sains (Fizik), Teknologi Pendidikan
(Science Education (Physics)), Educational Technology



Dr. Mohd Ikhwan Hadi Yaacob

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Kepakaran/Expertise:

Penderia dan Instrumentasi, MEMS, Akustik Marin
(Sensor & Instrumentation, MEMS, Underwater Acoustics)



Dr. Izan Roshawaty Mustapa

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Kepakaran/Expertise:

Fizik Bahan, Komposit Bio-Polimer
(Material Physics, Bio-Polymer Composites)



Dr. Rosazley Ramly

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Kepakaran/Expertise:

Fizik Bahan, Bahan Berasaskan Bio
(Material Physics, Bio-based Materials)



Dr. Mohd Syahrman Mohd Azmi

Ph.D (UKM), M.Sc. (UKM), B.Ed (Hons) (UPSI), Dip. Mech. Eng. Tech. (UTHM)

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Kepakaran/Expertise:

Teknologi Tenaga Solar, Fizik Tenaga, Pendidikan Fizik
(Solar Energy Technology, Energy Physics, Physics Education)



Dr. Nurul Syafiqah Yap Abdullah

Ph.D (USM), M.Sc. (UTM), B.Sc. (Hons) (UTM)

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Kepakaran/Expertise:

Fizik Instrumentasi, Pendidikan Fizik
(Physics Instrumentation, Physics Education)

JABATAN FIZIK (PHYSICS DEPARTMENT)



Ts. Dr. Mohd Norzaidi Mat Nawi

Ph.D (USM), B.Eng. (USM)



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Kepakaran/Expertise:

Penderia berasaskan bendalir, penderia aliran dalam air, MEMS (Fluidic based sensor, underwater flow sensor, MEMS)



Ts. Dr. Muhammad Noorazlan Abd Azis

Ph.D (UPM), B.Sc with Ed. (Hons) (UPM)



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Kepakaran/Expertise:

Kaca dan Seramik, Optik Gunaan, Sainsnano, Bahan Termaju (Glass and Ceramics, Applied Optics, Nanoscience, Advanced Materials)



Dr. Siti Nursaila Alias

Ph.D (USM), M.A. (USM), B.Ed. (Hons) (UPSI)



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Kepakaran/Expertise:

Pendidikan Sains (Fizik) (Science Education (Physics))



Dr. Anis Nazihah Mat Daud

Ph.D (UTM), M.Sc. (UPSI), B.Ed. (Hons) (UPSI)



: -



: anis.md@fsmt.upsi.edu.my

Kepakaran/Expertise:

Ujian Tanpa Musnah (Ultrasonik), Instrumentasi, Pendidikan Sains (Fizik) (Nondestructive Testing (Ultrasonics), Instrumentation, Science Education (Physics))



Dr. Lilia Ellany Mohtar

Ph.D (UKM), M.Ed. (UTM), B.Sc. With Ed. (UTM)



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Kepakaran/Expertise:

Pendidikan Fizik, Kreativiti Saintifik, Permodelan (SEM-AMOS) (Physics Education, Scientific Creativity, SEM-AMOS Modeling)



Dr. Afiq Radwan

Ph.D. (UTM), B.Sc. (UTM)



: -



: afiq@fsmt.upsi.edu.my

Kepakaran/Expertise:

Fizik Pengkomputeran, Teori Fungsi Ketumpatan (DFT), Mekanik Kuantum, Fizik Jirim Terkondensasi, Fizik Keadaan Pepejal (Computational physics, Density functional theory, Quantum mechanics, Condensed matter physics, Solid state physics)



Dr. Anis Diyana Halim

Ph.D (UTM), M.Ed. (USM), B.Ed. (UKM)



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Kepakaran/Expertise:

Pendidikan Sains Fizik (Physical Science Education)



En. Ahmad Kamal Ariffin

M.Sc. (USM), B.Sc. (Kansas City), Dip.Ed. (UTM)



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Kepakaran/Expertise:

Superkonduktor Suhu Tinggi, Spektroskopi Sinar-X (XANES), EXAFS, Pendidikan Fizik (High-Tc Superconductivity, X-rays Spectroscopy-XANES, EXAFS, Physics Education)



Pn. Mazlina Mat Darus

M.Sc. (UTM), B.Sc. (Hons) (UTM)



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Kepakaran/Expertise:

Nanobahan, Nanokomposit Hibrid, Fotopemangkin (Nanomaterials, Hybrid Nanocomposites, Photocatalyst)



Pn. Mahizah Ismail

M.Sc. (UKM), B.Sc. (Hons) (UM)



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: mahizah@fsmt.upsi.edu.my

Kepakaran/Expertise:

Superkonduktor Suhu Tinggi, Fizik Bahan (High-Tc Superconductivity, Material Physics)

JABATAN FIZIK (PHYSICS DEPARTMENT)



En. Wan Zul Adli Wan Mokhtar

M.Sc. (UKM), B.Sc. (Hons) (UTM)

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Kepakaran/Expertise:

Radio Solar, Cuaca Angkasa dan Pendidikan Fizik
(Solar Radio, Space Weather and Physics Education)



En. Roszairi Haron

M.Sc. (UM), B.Sc. (Hons) (UM)

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Kepakaran/Expertise:

Teknologi Saput Tipis, Amorfas Silikon Berhidrogen
(Thin Films Technology, Hydrogenated Amorphous Silicon)

Kakitangan Sokongan (Supporting Staffs)



En. Noradzman Hisham Shamsudin

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PROGRAM STRUCTURE

ISMP (Physics)

AT12

Minor
Students of Bachelor of Education (Physics) with Honours may choose 21 credit hours of minor courses from any programs offered by the university

Elective
Students need to take Level 1, 2 and 3 of Foreign Language courses as well as 1 open elective course

Teaching Practice

Course Code & Name	Credit
KPR3068 Teaching Practice	8
KPR3072 Apprentice Teacher	2
TOTAL	10

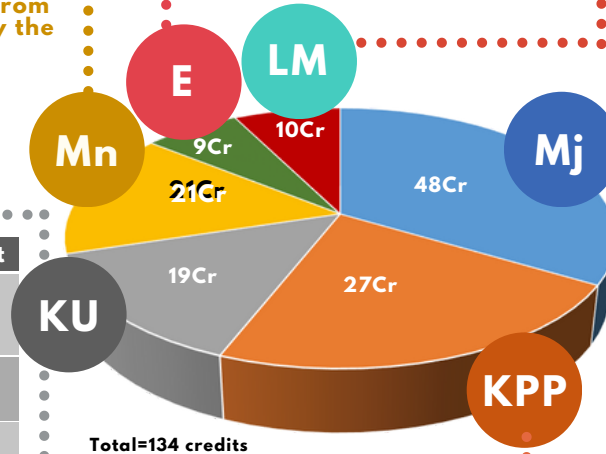
University Courses

University Course Package for local students

Course Code & Name	Credit
UPU2122 Appreciation of Ethics and Civilization	2
UPU3112 Philosophy and Current Issues	2
UBI3252 Essential English 1	2
UBI3262 Essential English 2	2
UPU3222 Entrepreneurial Culture	2
UBM3262 Malay Discourse Skills	2
UPU3312 National Studies	2
*** Co-Curriculum (Sport, Club/ Association & Uniformed Unit)	2
UPU2342 Integrity and Anti-Corruption	2
TOTAL	19

University Course packages for international students

Course Code & Name	Credit
UPU2122 Appreciation of Ethics and Civilization	2
UBM2142 Malay Communication 1	2
UBI3252 Essential English 1	2
UBI3262 Essential English 2	2
UPU3222 Entrepreneurial Culture	2
UBM3362 Malay Communication 2	2
UPU3322 Malaysian Art and Culture Heritage	2
*** Ko-Kurikulum (Sukan, Kelab/ Persatuan dan Unit Beruniform)	3
UPU2342 Integriti dan Anti Rasuah	2
TOTAL	27



Core Course: Education Professional

Course Code & Name	Credit
KPF3012 Education Development in Malaysia: Philosophy and Policy	2
KPS3023 Sociology of Education	3
KPP3023 Psychology in Education	3
KPD3036 Assessment Design and Teaching Technology	6
SFP3013 Implementation of Physics Teaching (MAJOR field)	3
***** Implementation of Minor Teaching (MINOR field)	3
KPR3012 Teaching Practice Reflection Seminar	2
KPK3012 Inclusive Education	2
KPG3013 Professional Teachers	3
TOTAL	27

Note: All the above courses must be repeated if the student obtains a Grade C- and below.

Major

Course Code & Name	Credit
*SFT3033 Mechanichss	3
SFT3023 Vibrations, Waves and Optics	3
*SFT3013 Electro-magnetism	3
SFE3053 Electronics	3
SFG3023 Thermo-dynamics	3
SFT3053 Solid State Physics	3
SFT3113 Mathematics for Physics	3
SFT3063 Mathematical Physics	3
SFT3103 Nuclear and Particle Physics	3
SFU3063 Special Topics in Physics	3
SFE3043 Computer Programming and Interfacing	3
SFU3073 Astronomy	3
SFT3093 Modern & Quantum Physics	3
SPR3003 Educational Research Method	3
SFR3923 Final Year Project 2	3
SFR3923 Final Year Project 2	3
TOTAL	48

Note: Courses marked with * must be repeated if students obtain Grade C- and below.

COURSE DISTRIBUTION

ISMP (Physics)

AT12

Suggested Course Registration by Semester For Semester 1 Admission Session 2023/2024

SEMESTER 1

UPU3112/	Philosophy and Current	2
*UBM2142	Issues/ *Malay Communication1	
KPF3012	Education Development in 2 Malaysia: Philosophy and Policy	
SFT3033	Mechanics	3
SFT3013	Electromagnetism	3
SFU3073	Astronomy	3
SFT3113	Mathematics for Physics	3

TOTAL 16

SEMESTER 2

UBM3262/	Malay Discourse	
*UBM3362	Skills/*Malay Communication 2	2
UPU2122	Appreciation of Ethics and Civilization	2
KPS3023	Sociology of Education	3
UPU3312/*	National studies/ UPU3322 Malaysian Art and Culture Heritage	2
***	Club/Association Co- curriculum component	1
SFT3023	Vibrations, Waves and Optics	3
SFG3023	Thermodynamics	3
SFE3053	Electronics	3

TOTAL 19

SEMESTER 3

UPU3322	Enterpreneurial culture	2
KPP3023	Psychology in Education	3
UBI3252	Essential English 1	2
***	Uniformed Unit Co- curriculum component	1
***	Foreign Language Level 1	2
SFE3043	Computer Programming dan Interfacing	3
SFT3063	Mathematical Physics	3
***	Minor 1	3

TOTAL 19

SEMESTER 4

KPK3012	Inclusive education	2
UBI3262	Essential English 2	2
***	Sport Co-curriculum component	1
***	Foreign Language Level 2	2
SFU3063	Special Topics In Physics	3
SFT3053	Solid State Physics	3
***	Minor 2	3
***	Minor 3	3

TOTAL 19

COURSE DISTRIBUTION

ISMP (Physics)

AT12

Suggested Course Registration by Semester For Semester 1 Admission Session 2023/2024

SEMESTER 5

KPD3036	Assessment Design and Teaching Technolo	6
KPG3013	Insan Guru Profesional	3
UPU2342	Integrity & Anti Corruption	2
SPR3003	Educational Research Method	3
***	Foreign Language Level 3	2
***	Minor 4	3

TOTAL 19

SEMESTER 6

SFR3913	Final Year Project 1	3
SFT3093	Modern and Quantum Physics	3
***	Minor 5	3
***	Minor 6	3
***	Elective	3

TOTAL 15

SEMESTER BREAK 6

KPR3072	Apprentice Teacher	2
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4 Weeks

SEMESTER 7

SFR3923	Final Year Project 2	3
SFT3103	Nuclear & Particle Physics	3
SFP3013	Implementation of Physics TeachingImplementation of	3
***	Minor Teaching	3
***	Minor 7	3

TOTAL 15

SEMESTER 8

KPR3068	Teaching practice	8
KPR3012	Teaching Practice Reflection Seminar	2

TOTAL 10

This course registration proposal is subject to course availability each semester. Students are advised to refer to their respective departments for any updates.

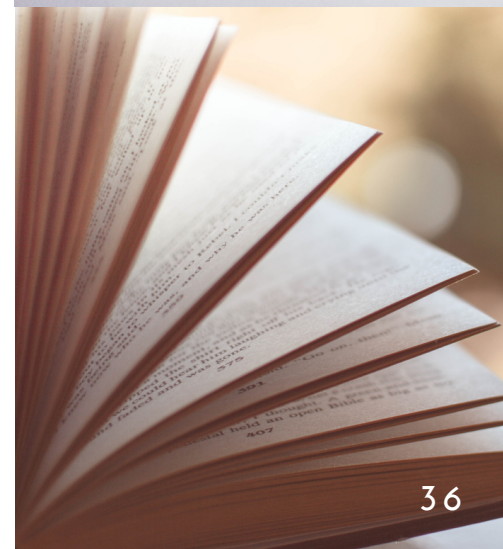
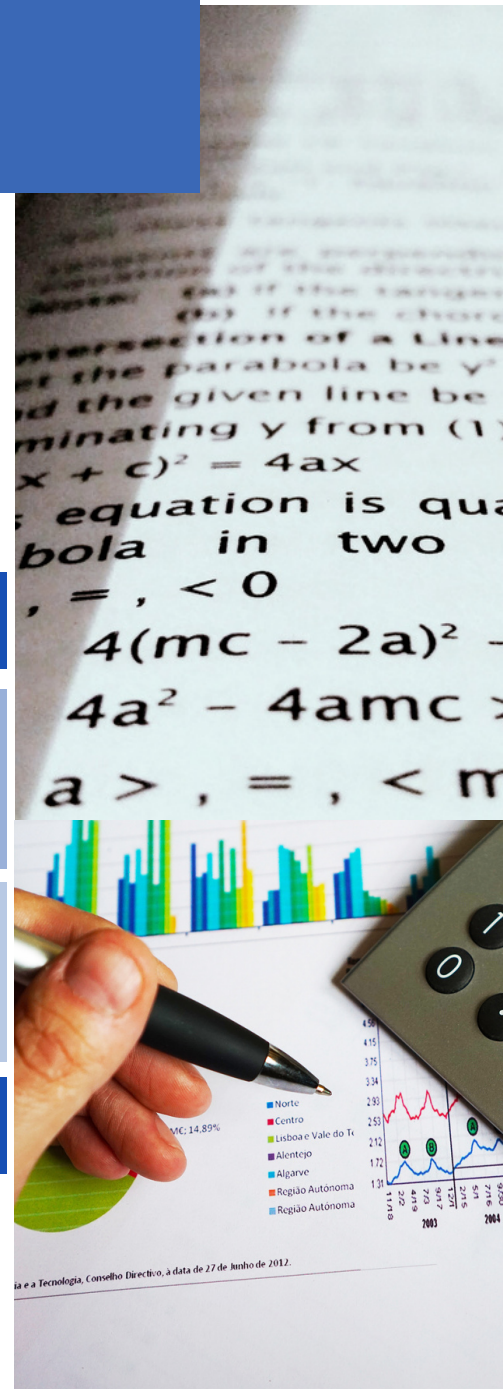
TEACHING

TRAINING

IMPLEMENTATION OF TEACHING PRACTICE (LM) AND APPRENTICE TEACHER (PG)

The new structure of Teaching Training for UPSI Bachelor of Education students starting Semester 1 admission session, Session 2023/2024 (October 2023):

Program	Implementation	Duration	Credits
Apprentice Teacher	Semester 6 Break	4 Week	2
Teaching Training	Semester 8	16 Weeks	8
TOTAL			10



PROGRAM STRUCTURE

ISMP (Physics)

AT12

Minor
Students of Bachelor of Education (Physics) with Honours may choose 33.6 ECTS of minor courses from any programs offered by the university

Elective
Students need to take Level 1, 2 and 3 of Foreign Language courses as well as 1 open elective course

Teaching Practice

Course Code & Name	ECTS
KPR3068 Teaching Practice	12.8
KPR3072 Apprentice Teacher	3.2
TOTAL	16

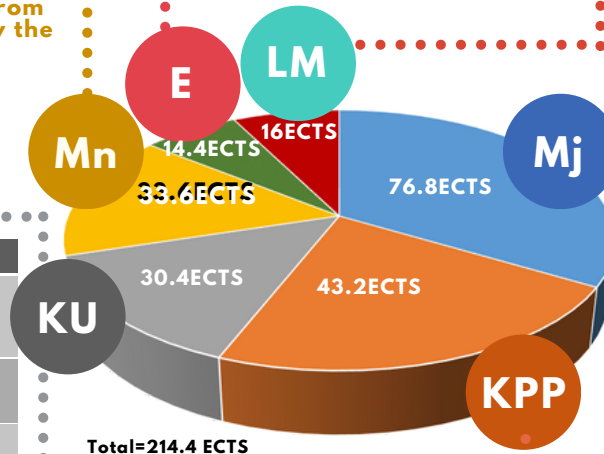
University Courses

University Course Package for local students

Course Code & Name	ECTS
UPU2122 Appreciation of Ethics and Civilization	3.2
UPU3112 Philosophy and Current Issues	3.2
UBI3252 Essential English 1	3.2
UBI3262 Essential English 2	3.2
UPU3222 Entrepreneurial Culture	3.2
UBM3262 Malay Discourse Skills	3.2
UPU3312 National Studies	3.2
*** Co-Curriculum (Sport, Club/ Association & Uniformed Unit)	3.2
UPU2342 Integrity and Anti-Corruption	3.2
TOTAL	30.4

University Course packages for international students

Course Code & Name	ECTS
UPU2122 Appreciation of Ethics and Civilization	3.2
UBM2142 Malay Communication 1	3.2
UBI3252 Essential English 1	3.2
UBI3262 Essential English 2	3.2
UPU3222 Entrepreneurial Culture	3.2
UBM3362 Malay Communication 2	3.2
UPU3322 Malaysian Art and Culture Heritage	3.2
*** Ko-Kurikulum (Sukan, Kelab/ Persatuan dan Unit Beruniform)	4.8
UPU2342 Integriti dan Anti Rasuah	3.2
TOTAL	30.4



Core Course: Education Professional

Course Code & Name	ECTS
KPF3012 Education Development in Malaysia: Philosophy and Policy	3.2
KPS3023 Sociology of Education	4.8
KPP3023 Psychology in Education	4.8
KPD3036 Assessment Design and Teaching Technolo	9.6
SFP3013 Implementation of Physics Teaching (MAJOR field)	4.8
***** Implementation of Minor Teaching (MINOR field)	4.8
KPR3012 Teaching Practice Reflection Seminar	3.2
KPK3012 Inclusive Education	3.2
KPG3013 Professional Teachers	3
TOTAL	43.2

Note: All the above courses must be repeated if the student obtains a Grade C- and below.

Major

Course Code & Name	ECTS
*SFT3033 Mechanichss	4.8
SFT3023 Vibrations, Waves and Optics	4.8
*SFT3013 Electro-magnetism	4.8
SFE3053 Electronics	4.8
SFG3023 Thermo-dynamics	4.8
SFT3053 Solid State Physics	4.8
SFT3113 Mathematics for Physics	4.8
SFT3063 Mathematical Physics	4.8
SFT3103 Nuclear and Particle Physics	4.8
SFU3063 Special Topics in Physics	4.8
SFE3043 Computer Programming and Interfacing	4.8
SFU3073 Astronomy	4.8
SFT3093 Modern & Quantum Physics	4.8
SPR3003 Educational Research Method	4.8
SFR3923 Final Year Project 2	4.8
SFR3923 Final Year Project 2	4.8
TOTAL	76.8

Note: Courses marked with * must be repeated if students obtain Grade C- and below.

COURSE DISTRIBUTION

ISMP (Physics)

AT12

Suggested Course Registration by Semester For Semester 1 Admission Session 2023/2024

SEMESTER 1

UPU3112/	Philosophy and Current	3.2
*UBM2142	Issues/ *Malay Communication1	
KPF3012	Education Development in Malaysia: Philosophy and Policy	3.2
SFT3033	Mechanics	4.8
SFT3013	Electromagnetism	4.8
SFU3073	Astronomy	4.8
SFT3113	Mathematics for Physics	4.8

TOTAL 25.6

SEMESTER 2

UBM3262/	Malay Discourse	
*UBM3362	Skills/*Malay Communication 2	3.2
UPU2122	Appreciation of Ethics and Civilization	3.2
KPS3023	Sociology of Education	4.8
UPU3312/*	National studies/ UPU3322 Malaysian Art and Culture Heritage	3.2
***	Club/Association Co- curriculum component	1.6
SFT3023	Vibrations, Waves and Optics	4.8
SFG3023	Thermodynamics	4.8
SFE3053	Electronics	4.8

TOTAL 30.4

SEMESTER 3

UPU3322	Enterpreneurial culture	3.2
KPP3023	Psychology in Education	4.8
UBI3252	Essential English 1	3.2
***	Uniformed Unit Co- curriculum component	1.6
***	Foreign Language Level 1	3.2
SFE3043	Computer Programming dan Interfacing	4.8
SFT3063	Mathematical Physics	4.8
***	Minor 1	4.8

TOTAL 30.4

SEMESTER 4

KPK3012	Inclusive education	3.2
UBI3262	Essential English 2	3.2
***	Sport Co-curriculum component	1.6
***	Foreign Language Level 2	3.2
SFU3063	Special Topics In Physics	4.8
SFT3053	Solid State Physics	4.8
***	Minor 2	4.8
***	Minor 3	4.8

TOTAL 30.4

COURSE DISTRIBUTION

ISMP (Physics)

AT12

Suggested Course Registration by Semester For Semester 1 Admission Session 2023/2024

SEMESTER 5

KPD3036	Assessment Design and Teaching Technolo	9.6
KPG3013	Insan Guru Profesional	4.8
UPU2342	Integrity & Anti Corruption	3.2
SPR3003	Educational Research Method	4.8
***	Foreign Language Level 3	3.2
***	Minor 4	4.8

TOTAL 30.4

SEMESTER 6

SFR3913	Final Year Project 1	4.8
SFT3093	Modern and Quantum Physics	4.8
***	Minor 5	4.8
***	Minor 6	4.8
***	Elective	4.8

TOTAL 24

SEMESTER BREAK 6

KPR3072	Apprentice Teacher	3.2
4 Weeks		

SEMESTER 7

SFR3923	Final Year Project 2	4.8
SFT3103	Nuclear & Particle Physics	4.8
SFP3013	Implementation of Physics TeachingImplementation of	4.8
***	Minor Teaching	4.8
***	Minor 7	4.8

TOTAL 24

SEMESTER 8

KPR3068	Teaching practice	12.8
KPR3012	Teaching Practice Reflection Seminar	3.2

TOTAL 16

This course registration proposal is subject to course availability each semester. Students are advised to refer to their respective departments for any updates.

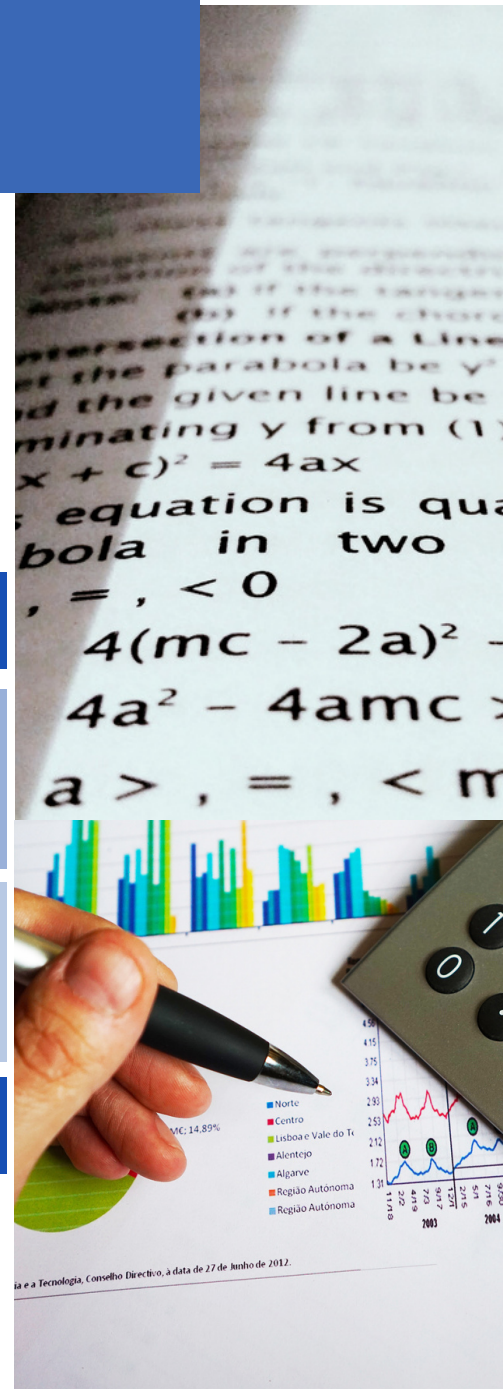
TEACHING

TRAINING

IMPLEMENTATION OF TEACHING PRACTICE (LM) AND APPRENTICE TEACHER (PG)

The new structure of Teaching Training for UPSI Bachelor of Education students starting Semester 1 admission session, Session 2023/2024 (October 2023):

Program	Implementation	Duration	ECTS
Apprentice Teacher	Semester 6 Break	4 Week	3.2 ECTS
Teaching Training	Semester 8	16 Weeks	12.8 ECTS
TOTAL			16 ECTS



COURSE SYNOPSIS

University
Course
(KU)

KU

UPU3112 PHILOSOPHY AND CURRENT ISSUES

This course covers the relationship between philosophy and the National Philosophy of Education and Rukun Negara. The use of philosophy as a tool to purify the culture of thought in life through art and methods of thinking and human concepts. The main topics in philosophy namely epistemology, metaphysics and ethics are discussed in the context of current issues. Emphasis is given to philosophy as a basis for establishing dialogue between cultures and fostering common values. At the end of this course, students will be able to see the disciplines as a comprehensive and interrelated body of knowledge.

UBI3252 ESSENTIAL ENGLISH 1

This course aims to develop the student's ability to report the information collected and analyze texts in areas of interest to the student. It also allows students to present explanations of ideas to communicate effectively on topics that are unfamiliar to students.

UBI3262 ESSENTIAL ENGLISH 2

This course further strengthens students' abilities in evaluating texts related to abstract and complex topics. It helps students communicate effectively through essay writing in academic and workplace contexts. It also helps students to form teamwork skills to share ideas and opinions in common and complex contexts.

UBM2142 MALAY LANGUAGE COMMUNICATION 1

This course further strengthens students' abilities in evaluating texts related to abstract and complex topics. It helps students communicate effectively through essay writing in academic and workplace contexts. It also helps students to form teamwork skills to share ideas and opinions in common and complex contexts.

UBM3362 MALAY LANGUAGE COMMUNICATION 2

This course emphasizes the mastery of Malay language skills for international students to be able to communicate in daily life situations well. Students will be introduced to simple Malay speaking and writing. The main focus is to master basic communication skills including speaking, writing, reading and listening in Malay.

UBM3262 MALAY DISCOURSE SKILLS

This course aims to improve students' communication skills in academic discourse. Students are exposed to practical skills in searching for information to produce scientific writing and presentations effectively in Malay.

UPU2122 UNDERSTANDING ETHICS AND CIVILIZATION

This course prepares students to appreciate the ethics & civilization that exists in the ethnically diverse society in Malaysia to strengthen their critical & analytical thinking to deal with a more challenging life. Completion of this course focuses on the appreciation of ethics & civilization in the Malaysian mold. Students will be exposed to the dynamics of the concept of ethics & civilization which became the strength for the formation of the Malaysian nation based on the time course of its historical evolution from the pre-colonial era to the post-colonial. An understanding of the formation of ethics & civilization in a diverse society is discussed to increase the appreciation of ethics & civilization towards the strengthening of national unity & the Malaysian nation. The Malaysian model of civilization needs to be examined and debated in academic activities guided by the Federal Constitution as a site of integration & a vehicle for ethics & civilization. The construction of national unity is greatly influenced by globalization & the development of complex information & communication technology. Because of that, the appreciation of ethics & civilization reveals the behavior of social responsibility & is mobilized at the level of the individual, family, community, society & country. Therefore, the changes taking place in society & direct economic development have brought new challenges in strengthening the sustainability of ethics & civilization in Malaysia. High Impact Education Practices (HIEPs) are practiced in teaching and learning to deepen this course. (teaching & learning).

UPU2342 INTEGRITY AND ANTI-CORRUPTION

This course includes basic concepts about the value of integrity, forms of corruption and abuse of power in everyday life as well as in organizations and measures to prevent corruption. Actual corruption issues and cases are also discussed in the learning session. The main focus of this course is to develop the skills needed to deal with issues of corruption, abuse of power and white collar crime so that an individual can act and maintain integrity at all times.

COURSE SYNOPSIS

University
Course
(KU)

KU

UPU3222 ENTREPRENEURSHIP CULTURE

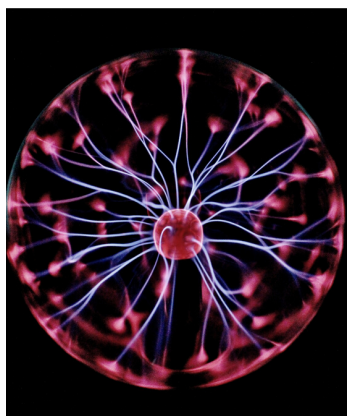
This course aims to give exposure to the basic concepts and principles of entrepreneurship to students so that they can generate interest in venturing into the field of entrepreneurship. This course focuses on the study of entrepreneurship and business skills with an emphasis on the implementation of interactive learning. Students are given the opportunity to experience real life as an entrepreneur by developing a business plan framework as well as carrying out activities based on entrepreneurship.

UPU3322 MALAYSIAN ART AND CULTURAL HERITAGE

This course introduces students to the various art forms of the multi-racial and ethnic communities that are part of Malaysia's cultural heritage. Students will study music, dance, theater and traditional crafts that represent the unique culture of the Malaysian community in Peninsular Malaysia, Sabah and Sarawak. Through hands-on involvement in performing arts and the making of selected crafts, students will develop a greater appreciation for Malaysian cultural heritage and a better understanding of Malaysian society.

UPU3312 NATIONAL STUDIES

This course emphasizes the aspects of nationhood in Malaysia. This covers the country's history, administrative system, constitution and government policies in the nation-building process. The Science of National Studies crosses various disciplines including History, Sociology, Anthropology, Political Science, Law and Economics.



COURSE SYNOPSIS

Professional Education Course (KPP)

KPP

KPF3012 EDUCATION DEVELOPMENT IN MALAYSIA: PHILOSOPHY AND POLICY

This course critically discusses the philosophy and legal policy of education by analyzing it in the context of the development of education in Malaysia. This course also explores and discusses the development of national education as a continuation of practices that should occur continuously in the national development process. Philosophy, policies, curriculum and rules in education are also emphasized to enable students to acquire knowledge and skills as well as foster attitudes in carrying out their responsibilities effectively in the teaching profession.

KPS3014 LEARNING MANAGEMENT

This course discusses the role of the teacher as a learning manager in the context of various learning environments. Students will be introduced to various aspects of learning management including organization, leadership, behavior, resources, technology, culture and capabilities. This course will expose students to real school experiences that will ultimately enable them to function effectively in all learning situations.

KPK3012 INCLUSIVE EDUCATION

This course focuses on the policy and philosophy of special education aimed at inclusive education. The course discusses current issues, the characteristics of special education students and discusses teaching strategies and techniques through an inclusive approach. The course also discusses collaboration between stakeholders in making inclusive education a success.

SBP3013 IMPLEMENTATION OF BIOLOGY TEACHING

This course aims to strengthen students' skills in planning and implementing teaching through micro and macroteaching in the main aspects of the teaching process: (a) stating learning outcomes, (b) choosing and planning teaching materials and sequences, (c) choosing and implementing teaching methods, strategies and techniques that is appropriate, (d) prepare and use appropriate teaching and learning media and technology, and (e) prepare, select and use appropriate assessment methods and tools to evaluate learning outcomes in Biology subjects, and (f) plan Action Studies

KPP3014 STUDENT LEARNING AND DEVELOPMENT

This course discusses aspects of learning and development of teenagers with an educational background that covers the student, the learning process and the diversity of students. In addition, aspects of the learning experience based on the mind, culture, language, self-ability, personality, social, environmental, emotional and physical are also highlighted.

KPD 3016 TEACHING, TECHNOLOGY AND ASSESSMENT 1

This course discusses and guides students to develop teaching planning skills in the following five main aspects: (a) stating teaching and learning objectives, (b) choosing and organizing teaching content and materials (c) choosing appropriate teaching approaches, methods and techniques, (d)) provide appropriate tools and technology in the teaching and learning process, (e) provide, select and use appropriate assessment tools and methods to assess and evaluate learning outcomes. Students will gain the skills to prepare a set of lesson plans on a topic in their specialization subject.

KPR3012 TEACHING PRACTICE REFLECTION SEMINAR

This course will enable students to critically reflect on teaching practice, make decisions, and find alternative solutions in teaching and learning based on teaching practice experience.

COURSE SYNOPSIS

Apprentice
Teacher (PG)/
Teaching
Practice (LM)

PG/
LM

KPR3072 APPRENTICE TEACHER

This course provides an opportunity for students to understand the school environment and school culture. It also gives students the opportunity to critically relate the National Education Philosophy in the school environment. In addition, this course also gives students the opportunity to identify teaching planning and facilitation as well as involvement with school management and co-curricular activities. This course is a prerequisite for teaching training courses 1 and 2.

KPR3068 TEACHING PRACTICE

This course aims to strengthen the skills of applying knowledge in the real context of teaching, learning and educational management in schools.

SFT3033 MECHANICS

This is a calculus based elementary mechanics which introduces fundamental concept in mechanics as applied to one dimension motion, Newton's laws of motion, work, kinetic and potential energy, momentum, impulse, rotational motion, elasticity and fluid mechanics

SFT3013 ELECTROMAGNETISM

The course focuses on basic principles and knowledge of electricity and magnetism. Topics discussed in this course are electric charges, Coulomb's law, electric field, electric potential, capacitance, Ohm's law, electromotive force (EMF), direct and alternating current, series and parallel circuit, Kirchoff's circuit laws, magnetic force, magnetic fields and inductance.

SFG3023 THERMODYNAMICS

This course discusses the fundamental concepts of thermodynamics. This course consists of following topics; temperature and heat, thermal properties of matter, heat capacities of gases, First Law of Thermodynamics, Second Law of Thermodynamics and entropy.

SFT3113 MATHEMATICS FOR PHYSICS

This course is designed to provide an understanding of many of the mathematical concepts and methods toward problem-solving in physics. The topics covered are elementary methods, differentiation, integration and differential equations and probability. The application of statistics in physics education research is also discussed.

SFU3063 SPECIAL TOPICS IN PHYSICS

This course exposes students with the latest development in the field of physics such as teaching and learning physics, fundamental and applied physics. This course also explores current issues in the following topics: teaching and learning physics, energy source, cosmology, introduction to material science and engineering, and materials and society.

SFT3023 VIBRATION, WAVES AND OPTICS

This course covers vibrations, waves and optics concepts such as simple harmonic motion, damped oscillations, forced oscillations, mechanical waves and electromagnetic waves. The nature of waves including refraction, dispersion, scattering, polarization, interference and diffraction are also discussed. Discussion are extended to the application of the concepts in optical instruments such as microscope, telescope and thin film.

SFE3053 ELECTRONICS

This course provides fundamental knowledge on semiconductor device characteristics, testing, their practical circuit applications, and an introduction to digital electronics. It establishes a foundation for understanding the operation and problem-solving in electronic circuits. Practical circuit examples and troubleshooting exercises are incorporated throughout the semester.

SFT3053 SOLID STATE PHYSICS

This course discusses the basic concepts in solid-state physics such as structure of solids, binding energy, lattice vibrations and the properties associated with the solids. The emphasis is on thermal, electrical, magnetic, dielectric and optical properties.

SFT3063 MATHEMATICAL PHYSICS

This course covers the fundamental mathematics used in advanced physics. Topics include vector analysis, differential equations, complex variables, and Fourier analysis.



SFE3043 COMPUTER PROGRAMMING AND INTERFACING

The course covers basic principles of computer programming and interfacing that include programming language for microcontroller, and applications of electronics for interfacing and computerized measurement system.

SFT3093 MODERN AND QUANTUM PHYSICS

This course exposes students to the basic concepts in Physics Education research. This course focuses on the processes and procedures in Physics Education research such as problem identification, objective and research question, literature review, research design, analysis, data interpretation and report writing. Students will be evaluated through research proposal writing and presentation, attitude and personality assessments.

SFR3913 FINAL YEAR PROJECT 1

This course gives students the opportunity to apply their knowledge and understanding of physics education research through writing and presenting research proposals. The content of the research proposal includes problem statement, research objectives and questions, research scope, research framework, literature highlights, research design, sampling, and data analysis and interpretation. The assessment of learning outcomes also includes the student's attitude and personality as a researcher.

SFU3073 ASTRONOMY

This course discusses the solar system, stars, galaxies and the universe. The course also discusses special topics such as space weather and observational equipment in astronomy

SFT3103 NUCLEAR AND PARTICLE PHYSICS

This course has two parts; nuclear and particle physics. For the nuclear physics, the topics covered in this part are the properties of nuclei, nuclear stability & radioactivity, nuclear reactions, fission & fusion and nucleus models. In particle physics, the students are exposed to fundamental particles & interactions, particle accelerators & detectors and the Standard Model.

SFR3923 FINAL YEAR PROJECT 2

This course gives students the opportunity to collect, analyse, and interpret research data based on the written research proposal. Students will write a final year project report and an academic writing and present the research findings in a final year project seminar/conference. The assessment of learning outcomes also includes the student's attitude and personality as a researcher.