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

F

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
: faudzi@fsmt.upsi.edu.my

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, Nanotiub Karbon, Grafin, Nanostruktur Oksida
(Carbon Nanotubes, Graphene, Oxide Nanostructure)

Prof. Madya Dr. Faridah Lisa Supian

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

:015-48797607/7220
: faridah.lisa@fsmt.upsi.edu.my

Kepakaran/Expertise:
Fizik Kimia, Langmuir-Blodgett, Kaliksarena, Polisiloksana, Fizik Keadaan Pepejal
(Chemical Physics, Langmuir-Blodgett, Calixarene, Polysiloxanes, Solid State Physic)

Prof. Madya Ts. Dr. Shahrul Kadri Ayop

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

: 015-48797529
: shahrul.kadri@fsmt.upsi.edu.my

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)

: 015-48797679
: thosw@fsmt.upsi.edu.my

Kepakaran/Expertise:
Pendidikan Sains (Fizik). Teknologi Pendidikan
(Science Education (Physics)), Educational Technology

Dr. Mohd Ikhwan Hadi Yaacob

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: 015-48797628
: ikhwan.hadi@fsmt.upsi.edu.my

Kepakaran/Expertise:
Penderia dan Instrumentasi, MEMS, Akustik Marin
(Sensor & Instrumentation, MEMS, Underwater Acoustics)

Dr. Izan Roshawaty Mustapa

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: 015-48797893/7720
: roshawaty@fsmt.upsi.edu.my

Kepakaran/Expertise:
Fizik Bahan, Komposit Bio-Polimer
(Material Physics, Bio-Polymer Composites)

Dr. Rosazley Ramly

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: 015-48797312
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Kepakaran/Expertise:
Fizik Bahan, Bahan Berasaskan Bio
(Material Physics, Bio-based Materials)

Dr. Mohd Syahriman Mohd Azmi

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

: 015-48797969
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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)

: 015-48797692
: syafiqah@fsmt.upsi.edu.my

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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: norzaidi@fsmt.upsi.edu.my

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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: anasaila@fsmt.upsi.edu.my

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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: lilia@fsmt.upsi.edu.my

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

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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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Kepakaran/Expertise:
Superkonduktor Suhu Tinggi, Fizik Bahan
(High-Tc Superconductivity, Material Physics)

JABATAN FIZIK
(PHYSICS DEPARTMENT)

En. Wan Zul Adli Wan Mokhtar
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Kepakaran/Expertise:
Radio Solar, Cuaca Angkasa dan Pendidikan Fizik
(Solar Radio, Space Weather and Physics Education)

En. Roszairi Haron

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Kepakaran/Expertise:
Teknologi Saput Tipis, Amorfus Silikon Berhidrogen
(Thin Films Technology, Hydrogenated Amorphous Silicon)

Kakitangan Sokongan (Supporting Staffs)

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Pn. Nashimatul Aliana Kamarul Bahrin
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PROGRAM STRUCTURE ISMP (Physics) AT12

Elective

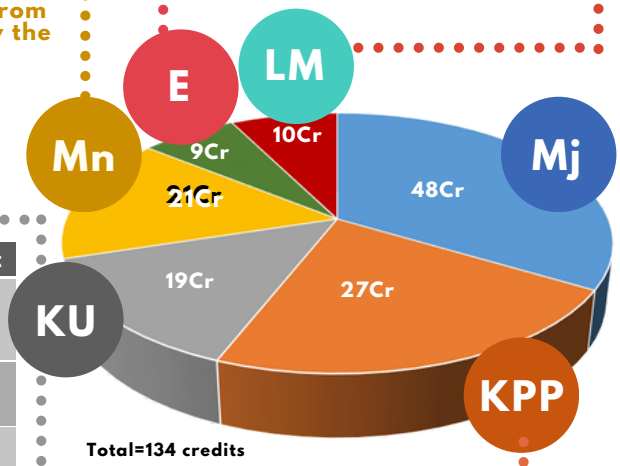
Students need to take Level 1, 2 and 3 of Foreign Language courses as well as 1 open elective course

Minor

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

Teaching Practice

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



Total=134 credits

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 Enterpreneurial 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 Enterpreneurial Culture	2
UBM3362 Malay Communication 2	2
UPU3322 Malaysian Art and Culture Heritage	2
*** Co-curriculum (Sports, Clubs/Associations and Uniformed Units)	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 Technolo	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/ *UBM2142	Philosophy and Current Issues/ *Malay Communication1	2
KPF3012	Education Development in Malaysia: Philosophy and Policy	2
SFT3033	Mechanics	3
SFT3013	Electromagnetism	3
SFU3073	Astronomy	3
SFT3113	Mathematics for Physics	3
	TOTAL	16

SEMESTER 2

UBM3262/ *UBM3362	Malay Discourse Skills/*Malay Communication 2	2
UPU2122	Appreciation of Ethics and Civilization	2
KPS3023	Sociology of Education	3
UPU3312/* UPU3322	National studies/ 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 Technology	6
KPG3013	Professional Teachers	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 BREAK6

KPR3072	Apprentice Teacher	2
	4 Weeks	

SEMESTER 7

SFR3923	Final Year Project 2	3
SFT3103	Nuclear & Particle Physics	3
SFP3013	Implementation of Physics	3
***	Teaching Implementation of Minor Teaching Minor 7	3
***		3
	TOTAL	15

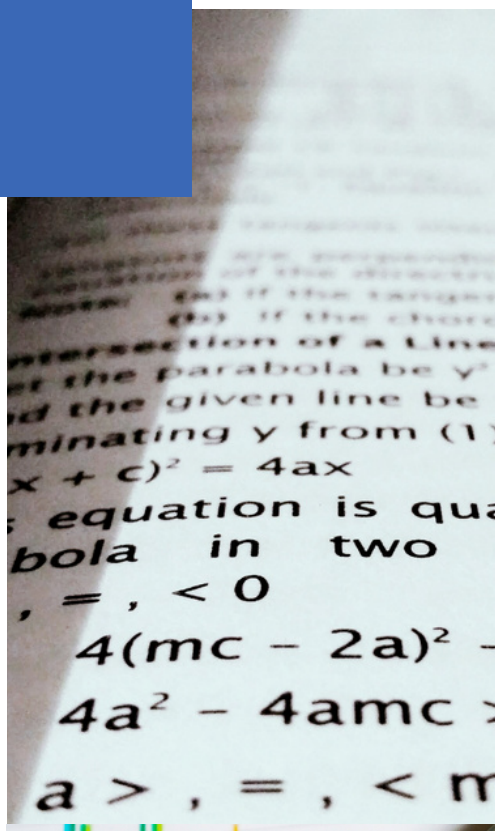
SEMESTER 8

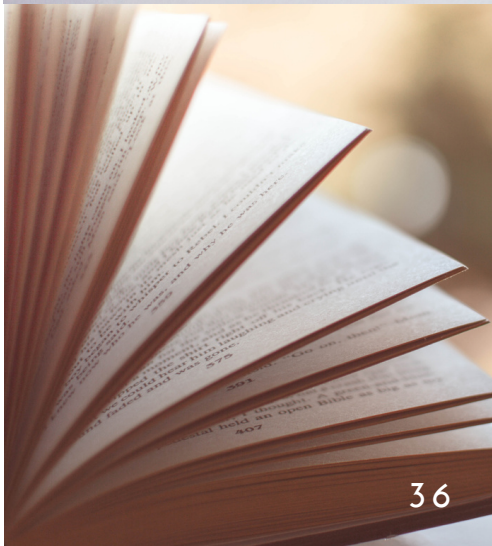
KPR3068	Teaching Practice	8
KPR3012	Teaching Practice Reflection Seminar	2
	TOTAL	10

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

Elective

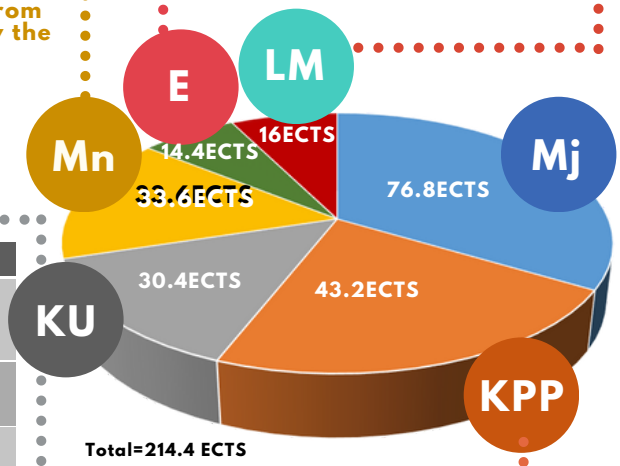
Students need to take Level 1, 2 and 3 of Foreign Language courses as well as 1 open elective course

Minor

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

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	Enterpreneurial 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	Enterpreneurial Culture	3.2
UBM3362	Malay Communication 2	3.2
UPU3322	Malaysian Art and Culture Heritage	3.2
***	Co-curriculum (Sports, Clubs/Associations and Uniformed Units)	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/ *UBM2142	Philosophy and Current Issues/ *Malay Communication1	3.2
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/ *UBM3362	Malay DIscourse Skills/*Malay Communication 2	3.2
UPU2122	Appreciation of Ethics and Civilization	3.2
KPS3023	Sociology of Education	4.8
UPU3312/* UPU3322	National studies/ 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 Technology	9.6
KPG3013	Professional Teachers	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 BREAK6

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	4.8
***	Teaching Implementation of Minor Teaching Minor 7	4.8
***		4.8
	TOTAL	24

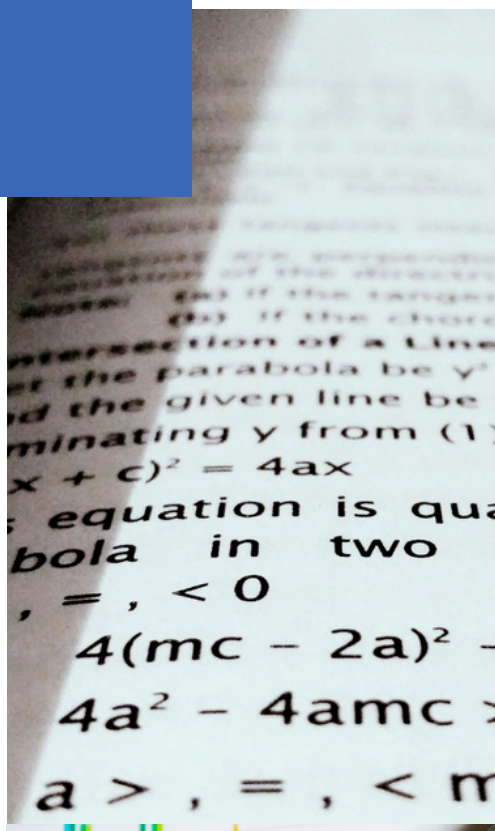
SEMESTER 8

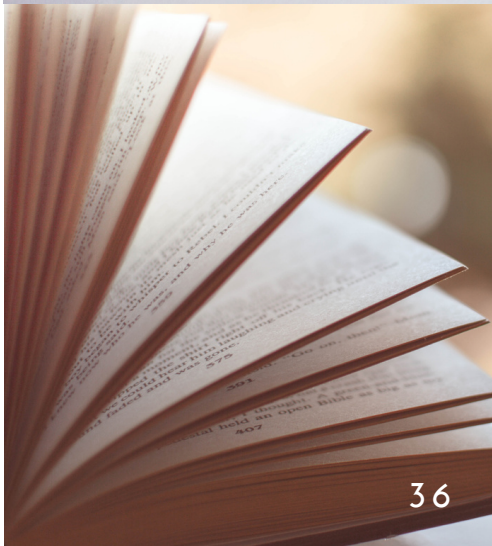
KPR3068	Teaching practice	12.8
KPR3012	Teaching Practice Reflection Seminar	3.2
	TOTAL	16

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	12.8ECTS
		TOTAL	16 ECTS

SINOPSIS KURSUS

ISMP (Fizik)

AT12

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.

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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.