

BACHELOR OF SCIENCE IN PHYSICS SESSION 2023/2024 (135 CREDITS)			
University Courses (14 Credits)			
Course Code	Course Title		Credits
GIG1003	Basic Entrepreneurship Culture		2
GIG1012/ GLT1017	Philosophy & Current Issue (Local students) / Basic Malay Language (only for international students)		2
GIG1013	Ethical Appreciation and Civilization		2
GKA/GKI/GKK/GK P/ GKS/GKU1001	Co-Curriculum		4
GLT####	English 1 & 2		4
Core Courses (83 Credits)			
Course Code	Course Title	Pre-requisite	Credits
LEVEL 1 (25 credits)			
SIF1003	Thermal Physics		2
SIF1005	Electronics I		2
SIF1006	Practical Physics 1		2
SIF1014	Vibrations and Waves		3
SIF1015	Quantum Physics		2
SIF1016	Mechanics I		2
SIF1017	Mathematical Methods I		3
SIF1018	Mathematical Methods II	SIF1017	4
SIX1015	Science, Technology and Society		2
SIX1016	Statistics		3
LEVEL 2 (31 credits)			
SIF2001	Quantum Mechanics I	SIF1017 & SIF1015	3
SIF2002	Electromagnetism I	SIF1017 & SIF1014	3
SIF2003	Electromagnetism II	SIF1018 & SIF2002	3
SIF2005	Statistical Physics	SIF1017 & SIF1003	3
SIF2007	Numerical and Computational	SIF1017	3
SIF2009	Electronics Practical	SIF1005	2
SIF2010	Physics Practical II	SIF1006	2
SIF2026	Mechanics II	SIF1016	3
SIF2027	Optics	SIF1014	3
SIF2028	Mathematical Methods III	SIF1018	4
SIF2029	Applied Physics Practical	SIF1006	2
LEVEL 3 (11 credits)			
SIF3001	Nuclear Physics	SIF2001	3
SIF3002	Atoms and Molecular Physics	SIF2001	3
SIF3003	Solid State Physics	SIF2001	3
SIF3018	Physics for Work	SIF2029	2
LEVEL 4 (16 credits)			
SIF4001	Project	SIF2001, SIF2003, SIF2005 & SIF3018	8
SIF4002	Industrial Training	SIF3018, SIF2007 & SIF2009	8
Elective Courses (38 credits)			
(I) Program Elective Courses or/and MINOR PACKAGE ** (30 credits) Choose from all elective courses or/and Minor Packages that are offered			
Course Code	Course Title	Pre-requisite	Credits
SIF2012	Modern Optics and Laser Physics	SIF1014	3
SIF2013	Photonics	SIF1014	3
SIF2015	Astrophysics	SIF1016	3
SIF2016	Materials Science	SIF1003	3
SIF2018	Radiation Physics	SIF1015	3
SIF2019	Gas Discharge Physics	SIF1003	3
SIF2020	Electronics II	SIF1005	3

SIF2021	Digital Electronics	SIF2020	3
SIF3006	Optoelectronics	SIF2027	3
SIF3007	Elementary Particle Physics	SIF2001 & SIF3021	3
SIF3008	Condensed Matter Physics	SIF3003	3
SIF3009	Plasma Physics and Technology	SIF2002	3
SIF3011	Quantum Mechanics II	SIF2001 & SIF2028	3
SIF3012	Computational Physics	SIF2007	3
SIF3019	Semiconductor Devices	SIF1005 & SIF3003	3
SIF3020	Quantum Optics and Technology	SIF2001 & SIF2027	3
SIF3021	Cosmology and General Relativity	SIF1018 & SIF2026	3
(II) University Elective Courses (8 credits) Student Holistic Empowerment (SHE) Choose one course from each cluster			
Course Code	Course Title	Credits	
Cluster 1	Thinking Matters: Mind & Intellect	2	
Cluster 2	Emotional & Spiritual Intelligence: Heart & Soul. GQX0056 Integrity and Anti-Corruption Course	2	
Cluster 3	Technology/Artificial Intelligence and Data Analytics: I-technie	2	
Cluster 4	Global Issue and Community Sustainability: Making the World a Better Place	2	

** Minor Package

- (1) Students are required to complete a minimum of 18 credits under the same minor package in order to be displayed on the transcript.
- (2) For further information, student can refer to UMSiTS Guide via this link: <https://umsitsguide.um.edu.my>

PROGRAM GOAL

To produce graduates with broad knowledge and understanding in physics, have effective communication and problem solving skills, highly committed to ethical practise as well as appreciate environmental, societal and safety factors in carrying out their duties.

PROGRAM LEARNING OUTCOMES

At the end of the Degree of Bachelor of Science in Physics program, graduates are able to:

1. Demonstrate proficiency in physics and its applications
2. Apply physics knowledge to solve complex applications, handle issues in various situation through critical thinking, analytical reasoning and problem solving skills
3. Demonstrate practical skills in physics such as designing and setting up experiments, collecting and analyzing data, identifying sources of error, interpreting experimental results and relating the results to physics concepts or scientific theories.
4. Demonstrate communication skills in conveying scientific information in both written and oral presentation, to team members as well as the general public of various backgrounds
5. Employ appropriate mathematical methods, computer modeling, media and software applications to solve physics related problems
6. Demonstrate leadership qualities and accountability in decision making that involves teamwork
7. Engage in self-directed lifelong learning effectively and use their skills and knowledge to explore opportunities in the real world
8. Demonstrate capability in seeking creative and practical solutions to meet the requirements and changes determined by the work environment and current issues in a professional and ethical way