

1. You are advised to read the instructions to courses registration posted in STARS. Please refer to STARS for the schedule of registration.
2. Students in Physics with 2nd Major in Mathematical Sciences should also refer to the instructions for programme in Mathematical Sciences. The **normal load is 19 AU**, while the **maximum load is 22AU**. When you are registering a course that will exceed your normal load, you can only do so after 5pm on your course registration day. If you wish to read a course that will exceed your maximum load, you can apply online through this link: <https://raspberry.spms.ntu.edu.sg/overload/apply/default.aspx>. Please note that approval is granted to a specific course that you wish to overload, and it may depend on your past satisfactory academic performance. You are advised to plan ahead as approval takes several days.
3. The following courses are to be read during Semester 1 AY 2021/2022 (subject to pre-requisites).

PHMA – AMAS Year 3			
Course Code	Course Title	Course Type	Course AU
PH3101	Quantum Mechanics II	Core	4
PH3102	Condensed Matter Physics I	Core	4

PHMA – PMAS Year 3			
Course Code	Course Title	Course Type	Course AU
PH3101	Quantum Mechanics II	Core	4
PH3102	Condensed Matter Physics I	Core	4
MH3600	Knots and Surfaces: Introduction to Topology	UE	4

PHMA – STAT Year 3			
Course Code	Course Title	Course Type	Course AU
PH3101	Quantum Mechanics II	Core	4
PH3102	Condensed Matter Physics I	Core	4
MH3510	Regression Analysis	UE	4

PHMA - AMAS Major PE/UE			
Course Code	Course Title	Course Type	Course AU
PH3403	Cosmology	Major PE	3
PH3404	Physics of Classical and Quantum Information	Major PE	3
PH4403	Surfaces and Interfaces	Major PE	4
PH4408	Nuclear Physics	Major PE	3
PH4411	Introduction to Experimental Particle Physics	Major PE	3

PH4405	Final Year Project (AY15 batch and before)	Major PE	10
PH4415	Final Year Project (AY16 batch till AY18 batch)	Major PE	11
PH4421	Final Year Project (AY19 batch and after)	Major PE	10
PH4407	Professional Internship (AY14 batch and before)	Major PE	10
PH4413	Professional Internship (AY15 batch only)	Major PE	10
PH4417	Professional Internship (AY16 batch till AY18 batch)	Major PE	11
PH4420	Professional Internship (AY19 batch and after)	Major PE	10
^MH3300	Graph Theory	Major PE/ UE	4
^MH3512	Stochastic Processes	Major PE/ UE	4
^MH4311	Cryptography	Major PE/ UE	4
^MH4320	Computational Economics	Major PE/ UE	4
^MH4700	Numerical Analysis II	Major PE/ UE	4
^MH4701	Mathematical Programming	Major PE/ UE	4
^MH4702	Probabilistic Methods in OR	Major PE/ UE	4
^CZ2001	Algorithms	Major PE/ UE	4
^CZ4042	Neural Networks	Major PE/ UE	4
^EE4476	Image Processing	Major PE/ UE	3

^As **Major PE** for **AY16 batch and before** student and as **UE** for **AY17 batch and after**.

PHMA - PMAS Major PE/UE			
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PH3403	Cosmology	Major PE	3
PH3404	Physics of Classical and Quantum Information	Major PE	3
PH4403	Surfaces and Interfaces	Major PE	4
PH4408	Nuclear Physics	Major PE	3
PH4411	Introduction to Experimental Particle Physics	Major PE	3
PH4405	Final Year Project (AY15 batch and before)	Major PE	10
PH4415	Final Year Project (AY16 batch till AY18 batch)	Major PE	11
PH4421	Final Year Project (AY19 batch and after)	Major PE	10
PH4407	Professional Internship	Major PE	10

	(AY14 batch and before)		
PH4413	Professional Internship (AY15 batch only)	Major PE	10
PH4417	Professional Internship (AY16 batch till AY18 batch)	Major PE	11
PH4420	Professional Internship (AY19 batch and after)	Major PE	10
^MH3210	Number Theory	Major PE/ UE	4
^MH4200	Abstract Algebra II	Major PE/ UE	4
^MH4300	Combinatorics	Major PE/ UE	4
^MH4311	Cryptography	Major PE/ UE	4

^As **Major PE** for **AY16 batch and before** student and as **UE** for **AY17 batch and after**.

PHMA - STAT Major PE/UE			
Course Code	Course Title	Course Type	Course AU
PH3403	Cosmology	Major PE	3
PH3404	Physics of Classical and Quantum Information	Major PE	3
PH4403	Surfaces and Interfaces	Major PE	4
PH4408	Nuclear Physics	Major PE	3
PH4411	Introduction to Experimental Particle Physics	Major PE	3
PH4405	Final Year Project (AY15 batch and before)	Major PE	10
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PH4407	Professional Internship (AY14 batch and before)	Major PE	10
PH4413	Professional Internship (AY15 batch only)	Major PE	10
PH4417	Professional Internship (AY16 batch till AY18 batch)	Major PE	11
PH4420	Professional Internship (AY19 batch and after)	Major PE	10
^MH3512	Stochastic Processes	Major PE/ UE	4
^MH4320	Computational Economics	Major PE/ UE	4
^MH4510	Statistical Learning and Data Mining	Major PE/ UE	4
^MH4511	Sampling and Survey	Major PE/ UE	4
^MH4513	Survival Analysis	Major PE/ UE	4
^MH4701	Mathematical Programming	Major PE/ UE	4
^MH4702	Probabilistic Methods in OR	Major PE/ UE	4

^BA2202	Mathematics of Finance	Major PE/ UE	4
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^As **Major PE for AY16 batch and before student** and as **UE for AY17 batch and after**.

- You are allowed to read higher level courses provided that you have met the pre-requisites and there are vacancies available. Pre-requisites may also be met through exemptions.
- The location of the Mathematics Labs is as follow.

Mathematics Lab	Location
COMP LAB 1	SPMS-MAS-03-02
COMP LAB 2	SPMS-MAS-03-03
COMP LAB 3	SPMS-MAS-03-04

- Students who are interested may take graduate courses as prescribed electives or unrestricted electives. A minimum CGPA of 4.00 is required for the application. Students will be required to fulfill at least 10 AU of level 4 [excluding PH4405/PH4415/PH4421 Final Year project or PH4407/PH4413/PH4417/PH4420 Professional Internship] and above courses as part of their graduation requirement under Major PE. Graduate course information may be found from <http://spms.ntu.edu.sg/PhysicsandAppliedPhysics/Graduate-Students/Pages/Course-Information.aspx>.

Students may write in to SPMSundgrad@ntu.edu.sg for more details on the application process.

These are the graduate courses offered in AY2021/2022 Semester 1:

- PAP710: Concepts in Statistical Mechanics.
- PAP716: Classical Electrodynamics

Please note that PAP710 is mutually exclusive with PH4501; PAP716 is mutually exclusive with PH4506. This application is subject to approval.

- Students who have taken courses as pre-requisites during exchange programme in the current Semester, please submit your waiver request via the Online Waiver Application using this link: <https://walnut.spms.ntu.edu.sg/waiver/student/default.aspx>. Please upload a copy of the course matching details and a copy of your exchange transcript (if any) in pdf format in your application.
- Enquiries on curriculum may be directed to :
 - Assoc Prof Cheong Siew Ann (cheongsa@ntu.edu.sg)
 - Ms Tan Soo Pei, Juliet (JulietTanSP@ntu.edu.sg)
 - Mr Chris Kee (kbkee@ntu.edu.sg) – Math Curriculum
- Enquiries on courses registration may be directed to SPMSundgrad@ntu.edu.sg. Your matriculation number must always be included in your e-mail. Please refrain from sending multiple similar e-mails as this will not expedite the response but rather it will cause undue delay. All enquiries will be attended to and will be replied as soon as possible, depending on the nature of the request. Appeals for GER-PE and UE vacancies are to be submitted through the online appeal system and will not be responded to if submitted otherwise.
- Enquiries on network performance, Studentlink password or STARS PIN may be directed to NSS Service Desk using the IT Service Desk Form below:
 - [ServiceNow](#)

- [Password Services](#) (To change or reset Network Account password)
- Service Desk Form: <https://www.ntu.edu.sg/life-at-ntu/internet-account-and-policy/service-desk-form>