



Department of Physics

香港城市大學
City University of Hong Kong

Bachelor of Science in Physics
理學士 (物理學)

Student Handbook

2022-2023

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1. Aims of Major

This major is to provide Bachelor-level education for students with diverse background, to equip them with knowledge and skills related to Physics (such as computational physics, biomedical physics, financial physics, environmental physics, optics, materials technology), thus enabling them to pursue a diversified career path in medicine and health care, education, engineering, commercial and industrial sectors, or postgraduate study. The GREAT⁺ stream is designed for students who have a good and solid foundation in Physics. It aims to produce graduates interested in pursuing a career in scientific research or starting business ventures that involve the use of new scientific discoveries and innovative technologies. On completion of the major, graduates will be able to integrate knowledge learned in the major to support in at least an original discovery or creative design relevant to applied physics.

+ *Global Research Enrichment and Technopreneurship Programme (GREAT)*

Intended Learning Outcomes of Major (MILOs)

Upon successful completion of this major, students should be able to:

No.	MILOs	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
		A1	A2	A3
1.	Apply knowledge of mathematics, physics, and engineering appropriate to the degree in Physics (with the focus on one or more of the areas in applied physics: environmental physics, optics, materials technology, and biomedical physics). This includes: (a) to design a component, a process or a system to meet desired needs within realistic constraints. (b) to identify, formulate, and solve physics and engineering problems.	✓	✓	
2.	Design and conduct experiments, as well as analyze, interpret and present results.		✓	✓
3.	Use the techniques, skills, and modern Physics and engineering tools including computer/IT tools necessary for practices appropriate to the degree in Physics along with an understanding of their processes and limitations.		✓	✓
4.	Appreciate the impact of Physics and engineering applications in a global and societal context, especially the importance of health, safety and environmental considerations to both workers and the general public.	✓	✓	
5.	Appreciate professional and ethical responsibility.			
6.	Appreciate basic laws and principles of physics and to use this knowledge to explain everyday life examples and phenomena, to explain science to people not in the science and engineering discipline, and to educate the public in physics.	✓		
7.	Work in a multidisciplinary team.		✓	
8.	Communicate effectively.		✓	
9.	Recognize the need for, and to engage in life-long learning, including the ability to stay abreast of contemporary issues.	✓	✓	
10.	Create an original discovery or design that are motivated from the major of study.	✓	✓	✓
11	Identify application values in research ideas and creative designs/ innovations motivated from physics. Transform the ideas/designs into practical research/business proposals or draft patent application for products.	✓	✓	✓

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishments of discovery/innovation/creativity through producing/constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

2. Degree Requirements

2.1. Minimum Number of Credit Units Required for the Award and Maximum Number of Credit Units Permitted

Degree Requirements	Normative 4-year Degree	Advanced Standing I
Gateway Education requirement	30 credit units	21 credit units
College/School requirement	6 credit units <u>GREAT⁺ stream</u> 13-17 credit units	waived
Major requirement	66/65 [^] credit units (Core: 45/48; 50/53 [^] Elective: 21/18; 15/12 [^]) <u>GREAT⁺ stream</u> 51 credit units (Ordinary Route) 50 credit units (Enhanced Maths Route)	66/65 [^] credit units (Core: 45/48; 50/53 [^] ; Elective: 21/18; 15/12 [^])
Free electives / Minor (if applicable)	18/19 [^] credit units <u>GREAT⁺ stream</u> 22-27 credit units (Ordinary Route) 23-28 credit units (Enhanced Maths Route)	3/4 [^] credit units
Minimum number of credit units required for the award	120 credit units	90 credit units
Maximum number of credit units permitted	144 credit units	114 credit units

[^] For students who are approved for taking the Enhanced Option of computation and maths courses.

+ Global Research Enrichment and Technopreneurship Programme (GREAT)

2.2. Gateway Education Requirement

Curriculum Catalogue Term	Semester A 2022/23 onwards	
	Normative 4-year Degree	Advanced Standing I (Note 1)
<u>University requirements</u>		
English		
• GE1401 University English	3 credit units	3 credit units
• Discipline-specific English	3 credit units	3 credit units
GE1501 Chinese Civilisation – History and Philosophy	3 credit units	3 credit units
<u>Distributional requirements</u> Area 1: Arts and Humanities Area 2: Study of Societies, Social and Business Organisations Area 3: Science and Technology	12 credit units <i>(At least one course from each of the three areas)</i>	6 credit units <i>(From two different areas)</i>
<u>College/School-specified courses</u> ^	9 credit units	6 credit units
Total	30 credit units	21 credit units

^ College/School-specified courses:

Course Code	Course Title	Level	Credit Units	Remarks
Normative 4-year Degree				
MA1200/ MA1300	Calculus and Basic Linear Algebra I/ Enhanced Calculus and Linear Algebra I	B1	3	
MA1201/ MA1301	Calculus and Basic Linear Algebra II/ Enhanced Calculus and Linear Algebra II	B1	3	
CS1302*	Introduction to Computer Programming	B1	3	
Advanced Standing I				
CS1302*	Introduction to Computer Programming	B1	3	Students who have attained equivalent qualifications may apply for exemption. They are required to complete any course of

				3 credits (NOT within the major requirements including core courses and electives) to replace the exempted credits.
MA1201/ MA1301	Calculus and Basic Linear Algebra II/ Enhanced Calculus and Linear Algebra II	B1	3	Students may be considered for exemption subject to passing the placement test or recommendation of MA department. They are required to complete any course of 3 credits (NOT within the major requirements, including core courses and electives) to replace the exempted credits.

* All BScPHY major students are required to take CS1302 Introduction to Computer Programming to fulfill the Gateway Education requirement.

2.3. College/School Requirement

(The catalogue term of the College/School requirement that students will follow will be the same as their admission term.)

Course Code	Course Title	Level	Credit Units	Remarks
Normative 4-year Degree (6 credit units)				
Choose two from the following four science courses subject areas:				
<i>Physics (Mandatory)</i>				
PHY1101 [#]	Introductory Classical Mechanics	B1	3	
<i>Biology</i>				
CHEM1200	Discovery in Biology	B1	3	
<i>Chemistry</i>				
CHEM1101/ CHEM1300	Introduction to Chemistry/ Principles of General Chemistry	B1	3/ 3	
<i>Mathematics</i>				
MA1501/ MA1502	Coordinate Geometry/ Algebra	B1	3/ 3	
Compulsory attendance for the following two soft skills courses:				
<i>Soft Skills</i>				
CSCI1001	Employability for Scientists	B1	0	
CSCI1002	Career Lab for Scientists	B1	0	
Advanced Standing I (0 credit unit)				
College Requirements waived				

[#] All BScPHY major students are required to take PHY1101 Introductory Classical Mechanics to fulfill the College Requirement.

GREAT Students

Course Code	Course Title	Level	Credit Units	Remarks
Research Methodology				
CSCI2002	Workshop on Research Methodology	B2	1	
College Requirements I (6-8 credit units)				
Choose two from the following seven courses:				
<i>Physics</i>				
PHY1101	Introductory Classical Mechanics	B1	3	
PHY1202	General Physics II	B1	3	
<i>Biology</i>				
CHEM3081	Chemical Biology of DNA and RNA	B3	4	
<i>Chemistry</i>				
CHEM2006	Principles of Inorganic Chemistry	B2	4	
CHEM2007	Principles of Organic Chemistry	B2	4	
<i>Mathematics</i>				
MA2172	Applied Statistics for Sciences and Engineering	B2	3	
MA2509	Discrete Mathematics	B2	3	
College Requirements II (6-8 credit units)				
Choose two from the following six courses:				
<i>Physics</i>				
PHY3202	Modern Physics	B3	3	
PHY3204	Wave and Optics	B3	3	
<i>Biology</i>				
CHEM3017	Molecular Biology	B3	4	
<i>Chemistry</i>				
CHEM2004	Principles of Analytical Chemistry	B2	4	
CHEM2008	Principles of Physical Chemistry	B2	4	
<i>Mathematics</i>				
MA1501	Coordinate Geometry	B1	3	

2.4. English Language Requirement

Normative 4-year degree students and Advanced Standing I students who passed the 6 credit units of specified GE English courses are recognized as fulfilling the University's English Language Requirement.

Students scoring below Level 4 in HKDSE English Language or Grade D in HKALE AS-level Use of English or students who do not possess an equivalent qualification are required to complete two 3-credit unit courses, LC0200A English for Academic Purposes 1 and LC0200B English for Academic Purposes 2, prior to taking the GE English courses. Students who demonstrate that they have achieved a grade B or above in their overall course results for LC0200A will achieve 3 credits and also be considered to have satisfied the pre-requisite for entry to the GE English courses without needing to take LC0200B. The credit units of LC0200A and LC0200B will not be counted towards the minimum credit units required for graduation and will not be included in the calculation of the cumulative grade point average (CGPA). However, they will be counted towards the maximum credit units permitted.

2.5. Chinese Language Requirement

Students scoring below Level 4 in HKDSE Chinese Language, or below Grade D in HKALE AS-level Chinese Language and Culture will be required to complete a 3-credit unit course CHIN1001 University Chinese I. The 3 credit units will not be counted towards the minimum credit units required for graduation and will not be included in the calculation of the cumulative grade point average (CGPA). However, they will be counted towards the maximum credit units permitted.

For course details, please refer to the ARRO website (http://www.cityu.edu.hk/catalogue/ug/current/catalogue/catalogue_UC.htm?page=B/B_course_index.htm). Please always refer to this website for the most updated information.

2.6. Major Requirement

Core Courses

- Normative 4-year Degree (45 or 48 credit units; 50 or 53 credit units[^])
- Advanced Standing I (45 or 48 credit units; 50 or 53 credit units[^])

Course Code	Course Title	Level	Credit Units	Remarks
PHY1202	General Physics II	B1	3	Advanced Standing I Students with acceptable qualifications may apply for exemption on a case by case basis. They are required to complete any 3 CU course to replace the exempted credits.
PHY1203	General Physics III	B1	3	Advanced Standing I Students with acceptable qualifications may apply for exemption on a case by case basis. They are required to complete any 3 CU course to replace the exempted credits.
PHY2191	Electricity and Magnetism	B2	3	
PHY2212	Measurement and Instrumentation	B2	3	
PHY2213	Advanced Measurement and Instrumentation	B2	3	
PHY3202	Modern Physics	B3	3	
PHY3204	Waves and Optics	B3	3	
PHY3205	Electrodynamics	B3	3	
PHY3231	Advanced Instrumentation Lab	B3	3	
PHY3251	Quantum Mechanics	B3	3	
PHY3272	Introduction to Solid State Physics	B3	3	
PHY3290	Thermodynamics	B3	3	

PHY4216/ PHY4217/ CSCI4003	Project/ Dissertation/ Co-operative Education Placement Project for Science Students	B4	3/ 6/ 6	<ul style="list-style-type: none"> - Students taking <i>PHY4216 Project</i> are required to <u>take</u> 3 more credits of elective course. • <i>CSCI4003 Co-operative Education Placement Project for Science Students</i> (6 CUs) can be used to replace <i>PHY4217 Dissertation</i> (6 CUs). Students taking <i>CSCI4003</i> are required to take <i>CSCI4001</i> simultaneously.
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Select ONE from the following blocks of computation and maths courses:

Ordinary Option

Course Code	Course Title	Level	Credit Units	Remarks
PHY3115	Introduction to Computational Physics	B3	3	
MA2158	Linear Algebra and Calculus	B2	3	Advanced Standing students may be required to complete MA1200 Calculus and Basic Linear Algebra I and MA1201 Calculus and Basic Linear Algebra II (the pre-requisite courses) before they are allowed to enroll <i>MA2158 Linear Algebra and Calculus</i> . They are advised to apply and sit for the placement test organized by MA department before the commencement of Semester A of their admitted academic year.

Enhanced Option

(Students have to meet the specified criteria**and obtain the prior approval from the Department for taking this option.)

Course Code	Course Title	Level	Credit Units	Remarks
MA2503	Linear Algebra	B2	4	
MA2508	Multi-variable Calculus	B2	4	
MA3511	Ordinary Differential Equations	B3	3	

** Eligibility for the Enhanced Option:

Normative 4-year Degree

- (1) Students who plan to pursue the Joint Bachelor's Degree Program between CityU and ColumbiaU **OR**
(2) Students who obtained *Grade B+ or above for MA1301 Enhanced Calculus & Linear Algebra II* or
Grade A- or above for MA1201 Calculus & Linear Algebra II.

Advanced Standing Students

- (1) Students who obtained *Grade B+ or above for MA1301 Enhanced Calculus & Linear Algebra II* or
Grade A- or above for MA1201 Calculus & Linear Algebra II **OR**
(2) Students who passed 85% of the combined MA Placement test for MA1200 Calculus & Basic Linear Algebra I and MA1201 Calculus & Basic Linear Algebra II.

[^]For students who are approved for taking the Enhanced Option of computation and maths courses.

Electives

- Normative 4-year Degree (21 or 18 credit units; 15 or 12 credit units[^])

- Advanced Standing I (21 or 18 credit units; 15 or 12 credit units[^])

- Students in the BSc-MSc programme have to take any 9 credit unit courses (Level P5 & 6) from the MSc Applied Physics Programme to fulfill this elective requirement. They should consult the Programme Leaders and Course Leaders before enrolling these electives.

Course Code	Course Title	Level	Credit Units	Remarks
CSCI3001	Grand Challenges in the World	B3	3	
MSE2102	Introduction to Materials Engineering	B2	3	
MSE3171	Materials Characterization Techniques	B3	3	
MSE4121	Thin Film Technology and Nanocrystalline Coatings	B4	3	
MSE4127	Smart Sensors: From Engineering to Applications	B4	3	
PHY3220	Financial Engineering from a Scientist's Perspective	B3	3	
PHY4172	Computational Physics	B4	3	
PHY4230	Radiation Safety	B4	3	
PHY4232	Radiotherapy Physics	B4	3	
PHY4233	Imaging Physics	B4	3	
PHY4254	Fundamentals of Laser Optics	B4	3	
PHY4265	Semiconductor Physics and Devices	B4	3	
PHY4273	Special Topics in Physics	B4	3	
PHY4274	Radiation Biophysics	B4	3	
PHY4275	Radiological Physics and Dosimetry	B4	3	
PHY4283	Physics in Medicine	B4	3	

[^] For students who are approved for taking the Enhanced Option of computation and maths courses.

GREAT Students

1. Core Courses

Ordinary Route (51 credit units)

Course Code	Course Title	Level	Credit Units	Remarks
MA2158	Linear Algebra and Calculus	B2	3	
MGT2324	Introduction to Entrepreneurship	B2	3	
PHY1203	General Physics III	B1	3	
PHY2191	Electricity and Magnetism	B2	3	
PHY2212	Measurement and Instrumentation	B2	3	
PHY2213	Advanced Measurement and Instrumentation	B2	3	
PHY3115	Introduction to Computational Physics	B3	3	
PHY3205	Electrodynamics	B3	3	
PHY3231	Advanced Instrumentation Lab	B3	3	
PHY3251	Quantum Mechanics	B3	3	
PHY3272	Introduction to Solid State Physics	B3	3	
PHY3290	Thermodynamics	B3	3	
PHY4172	Computational Physics	B4	3	
PHY4218	Independent Research I	B4	6	
PHY4219	Independent Research II	B4	6	

Enhanced Maths Route (50 credit units)

Course Code	Course Title	Level	Credit Units	Remarks
MA2503	Linear Algebra	B2	4	
MA2508	Multi-variable Calculus	B2	4	
MA3511	Ordinary Differential Equations	B3	3	
MGT2324	Introduction to Entrepreneurship	B2	3	
PHY2191	Electricity and Magnetism	B2	3	
PHY2212	Measurement and Instrumentation	B2	3	
PHY3115	Introduction to Computational Physics	B3	3	
PHY3205	Electrodynamics	B3	3	
PHY3251	Quantum Mechanics	B3	3	
PHY3272	Introduction to Solid State Physics	B3	3	
PHY3290	Thermodynamics	B3	3	
PHY4172	Computational Physics	B4	3	
PHY4218	Independent Research I	B4	6	
PHY4219	Independent Research II	B4	6	

2. Free Electives

- Ordinary Route (22-27 credit units)

- Enhanced Maths Route (23-28 credit units)

Students are highly recommended to take the following courses as free electives to enrich their background in Physics or entrepreneurship training.

Course Code	Course Title	Level	Credit Units	Remarks
CSCI3001	Grand Challenges in the World	B3	3	
CSCI4007	Patent Application and Technopreneurship	B4	3	
MGT4305	Developing and Presenting a Business Plan	B4	3	
MSE2102	Introduction to Materials Engineering	B2	3	
MSE3171	Materials Characterization Techniques	B3	3	
MSE4121	Thin Film Technology and Nanocrystalline Coatings	B4	3	
MSE4127	Smart Sensors: From Engineering to Applications	B4	3	
PHY1101	Introductory Classical Mechanics	B1	3	For students who did not take it as College Requirement Course in Year 1
PHY1202	General Physics II	B1	3	For students who did not take it as College Requirement Course in Year 1
PHY1203	General Physics III	B1	3	For Enhanced Maths route only
PHY2213	Advanced Measurement and Instrumentation	B2	3	For Enhanced Maths route only
PHY3202	Modern Physics	B3	3	For students who did not take it as College Requirement Course in Year 1
PHY3204	Wave and Optics	B3	3	For students who did not take it as College Requirement Course in Year 1
PHY3220	Financial Engineering from a Scientist's Perspective	B3	3	
PHY3231	Advanced Instrumentation Lab	B3	3	For Enhanced Maths route only
PHY4230	Radiation Safety	B4	3	
PHY4232	Radiotherapy Physics	B4	3	
PHY4233	Imaging Physics	B4	3	
PHY4254	Fundamentals of Laser Optics	B4	3	
PHY4265	Semiconductor Physics and Devices	B4	3	
PHY4273	Special Topics in Physics	B4	3	

PHY4274	Radiation Biophysics	B4	3	
PHY4275	Radiological Physics and Dosimetry	B4	3	
PHY4283	Physics in Medicine	B4	3	

For course details, please refer to the ARRO website (http://www.cityu.edu.hk/catalogue/ug/current/catalogue/catalogue_UC.htm?page=B/B_course_index.htm).

Please always refer to this website for the most updated information.

Students may ask for special approval for waiving the course prerequisites. The waiving of course prerequisites would be subject to the approval from both the course leader and the major leader on the basis of the students' academic background.

3. Recommended Study Plan

1. A set of core courses (see tables below) is pre-registered for students according to their recommended study plan.
2. Students are advised to plan their study according to the suggested pattern to avoid possible time conflict between courses. They should also pay attention to the Degree Requirements (Section 2) when planning their studies.
3. For GE courses, Chinese course, Electives and Free Electives, students have to register them on web during the add/drop period.
4. Students wishing to drop/change a pre-assigned course have to do so on web or using the paper form during the add/ drop period. However, after dropping/changing the course, the places may be taken up by other students and they may not be able to enroll the pre-assigned course again.

3.1. For Normative 4 Year Degree Students

Year 1

Semester A		Semester B		Summer Term		
Course Code	CUs	Course Code	CUs	Course Code	CUs	
PHY1101	3	PHY1202	3			
CS1302	3	PHY1203	3			
CSCI1001	0	CHEM1101*	3	<input checked="" type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning		
MA1200 or MA1300	3	CSCI1002	0			
GE1401 or LC0200A	3	MA1201 or MA1301	3			
GE Course	3	GE2401^ or LC0200B	3			
<input type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning		<input type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning				

Year 2

Semester A		Semester B		Summer Term	
Course Code	CU's	Course Code	CU's	Course Code	CU's
PHY2191	3	PHY2213	3		
PHY2212	3	PHY3202	3		
MA2158	3	PHY3204	3	<input checked="" type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning	
GE1501	3	PHY3290	3		
GE Course	3	GE Course	3		
<input checked="" type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning		<input checked="" type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning			

Year 3

Semester A		Semester B		Summer Term	
Course Code	CU's	Course Code	CU's	Course Code	CU's
PHY3231	3	PHY3205	3		
PHY3251	3	PHY3272	3		
GE Course	3	PHY3115	3	<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning	
Free Electives	6	Free Electives	6		
<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning		<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning			

Year 4

Semester A		Semester B		Summer Term	
Course Code	CU's	Course Code	CU's	Course Code	CU's
PHY4216 or PHY4217	3	PHY4217 or CSCI4003#	3 or 6#		
Major Electives	12	Major Electives	6 or 9≠	<input type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input type="checkbox"/> Go Global - Learning Abroad <input type="checkbox"/> Go Global - Service Learning	
		Free Electives	6		
<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning		<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning			

Please refer to the details of the Go Global program for eligibility of joining the program concerned.

* Students may choose to take another course (CHEM1200, CHEM1300, MA1501 or MA1502) to fulfill College requirement, subject to the course vacancies and offering term. They will need to change the course on web during the add/drop period.

^ Students may choose to take GE2410 English for Engineering to fulfill the Discipline-specific English requirement, subject to the course vacancies. They will need to change the course on web during the add/drop period.

Year 4 students who take CSCI4003 Co-operative Education Placement Project for Science Students (6CUs) in Semester B need to continue their studies in the following Summer Term and Semester A. They are also required to take CSCI4001 Co-operative Education Scheme for Science Students simultaneously.

≠ Year 4 students need to take 9 CUs for major elective courses in Semester B if they select PHY4216 Project (3CUs) in Semester A.

3.2. For Advanced Standing I Students

Year 2

Semester A		Semester B		Summer Term	
Course Code	CUs	Course Code	CUs	Course Code	CUs
CS1302	3	PHY1202	3		
MA1201	3	PHY1203	3		
GE1501	3	PHY3202	3	<input checked="" type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning	
GE1401 or LC0200A	3	PHY3204	3		
GE Course	3	GE2401^ or LC0200B	3		
<input type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning		<input type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning			

Year 3

Semester A		Semester B		Summer Term	
Course Code	CUs	Course Code	CUs	Course Code	CUs
PHY2191	3	PHY2213	3		
PHY2212	3	PHY3115	3		
PHY3231	3	PHY3205	3		
PHY3251	3	PHY3272	3	<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning	
MA2158	3	PHY3290	3		
<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning		<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning			

Year 4

Semester A		Semester B		Summer Term	
Course Code	CUs	Course Code	CUs	Course Code	CUs
PHY4216 or PHY4217	3	PHY4217 or CSCI4003#	3 or 6#		
Major Electives	12	Major Electives	6 or 9≠		
		Free Electives	3	<input type="checkbox"/> Go Global - Exchange <input type="checkbox"/> Go Global - Internship <input type="checkbox"/> Go Global - Learning Abroad <input type="checkbox"/> Go Global - Service Learning	
		GE course	3		
<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning		<input checked="" type="checkbox"/> Go Global - Exchange <input checked="" type="checkbox"/> Go Global - Internship <input checked="" type="checkbox"/> Go Global - Learning Abroad <input checked="" type="checkbox"/> Go Global - Service Learning			

Please refer to the details of the Go Global program for eligibility of joining the program concerned.

^ Students may choose to take GE2410 English for Engineering to fulfill the Discipline-specific English requirement, subject to the course vacancies. They will need to change the course on web during the add/drop period.

Year 4 students who take CSCI4003 Co-operative Education Placement Project for Science Students (6CUs) in Semester B need to continue their studies in the following Summer Term and Semester A. They are also required to take CSCI4001 Co-operative Education Scheme for Science Students simultaneously.

≠Year 4 students need to take 9 CUs for major elective courses in Semester B if they select PHY4216 Project (3CUs) in Semester A.

4. Academic Regulations

Students should observe the University's Academic Regulations for Undergraduate Degrees at all times. For further details and most updated information, please always refer to the website of Academic Regulations and Records Office (ARRO) (<http://www.cityu.edu.hk/arro/content.asp?cid=165>).

5. Academic Honesty

Students must pursue their studies with academic honesty. Academic honesty is central to the conduct of academic work. Students are expected to present their own work, give proper acknowledgement of other's work, and honestly report findings obtained. As part of the University's efforts to educate students about academic honesty, all students are required to complete the Online Tutorial and Quiz on Academic Honesty and make a Declaration on their understanding of academic honesty.

Academic dishonesty includes but is not restricted to the following behaviors:

- (a) Plagiarism, e.g., the failure to properly acknowledge the use of another person's work or submission for assessment material that is not the Student's own work;
- (b) Misrepresentation of a piece of group work as the Student's own individual work;
- (c) Collusion, i.e., allowing another person to gain advantage by copying one's work;
- (d) Unauthorized access to an examination/test paper;
- (e) Possession/use of unauthorized material in assessment;
- (f) Unauthorized communication during assessment;
- (g) Use of fabricated data claimed to be obtained by experimental work, or data copied or obtained by unfair means;
- (h) Impersonating another Student at a test or an examination or allowing oneself to be impersonated;
- (i) Use of fraudulent documents and/or information to gain advantage for any academic work, e.g. submission of a fraudulent medical certificate to request for a make-up examination.

Students who commit an act of academic dishonesty which is regarded as a **serious academic offence** in the University may lead to disciplinary action with a penalty including without limitation, expulsion from the University, debarment from re-admission, deprivation of an academic award already conferred or revocation of a certification granted.

For details of the rules on Academic Honesty, students should refer to the website of Office of the Provost (www.cityu.edu.hk/provost/academic_honesty/rules_on_academic_honesty.htm).

6. Assessment

Students are assessed through a variety of methods, creating ample opportunity to demonstrate their abilities. The means of assessment vary from course to course but typically include coursework as well as the written examinations. Coursework consists of written assignments, computer simulations, tutorials, project, laboratory reports and presentations etc. Examinations are held at the end of each course.

For undergraduate courses, students have to obtain at least 30% of the maximum marks in the final examination in order to pass a course (i.e. D or above) where there is an examination component in the assessment.

Students should check the updated minimum passing mark required for different courses under the section of “Programmes and Courses” of the ARRO’s website (www.cityu.edu.hk/arro).

6.1. Mitigation

A student who reasonably believes that his/her ability to attend an examination, or in-course assessment with a weighting of 20% or above, has been adversely affected by circumstances beyond his/her control may submit a mitigation request with the scanned relevant supporting documents (e.g. medical certificate) to the Department via AIMS **no later than 5 working days from the scheduled date for completing the affected examination or assessment. It is the student’s responsibility to hand in the original copies of all the required documents to the Department by the aforesaid deadline as well.**

Upon receipt of a mitigation request (including the original copies of the required documents), the Department will investigate the case, in consultation with the course-offering academic unit (if appropriate). Only compelling reasons such as illness, hospitalization, accident, family bereavement or other unforeseeable serious circumstances will be considered. If the case is substantiated, the Assessment Panel will then decide if a make-up examination or coursework or other alternative assessment will be offered to the student concerned. **Only one make-up examination will be arranged per course per semester.**

6.2. Minimum CGPA Requirement for Graduation

The minimum graduation CGPA for a degree and a second major is **2.00**.

6.3. Award Classifications

Normative 4 Year Degree Students & Advanced Standing I Students

Degrees with Distinction are awarded based on the CGPA ranking for students in the respective departments/schools graduating in the same semester/term.

<i>Award</i>	<i>To graduates ranked in the</i>
<i>summa cum laude</i> (Highest Distinction)	top 2 %
<i>magna cum laude</i> (High Distinction)	next 5%
<i>cum laude</i> (Distinction)	next 8 %

6.4. Academic Regulations on Termination of Study

The Examination Board may terminate the study of a student under the following circumstances:

-
- (i) The student's SGPA is below 1.70 for any three enrolled semesters; or
 - (ii) The student's academic progress is unsatisfactory and is unable to meet the conditions stipulated by the home academic unit after being put on Academic Probation for one semester.
-

Students' studies will be **TERMINATED** if they **FAIL** to pass a required course, or its equivalent/substitute course, after **THREE** attempts.

Further details can be obtained from the ARRO's website, under the section of "Current Students" → "Regulations & Guidelines" (www.cityu.edu.hk/arro).

7. Late drop policy

Students can add or drop a course during the add/drop period prescribed by the University. After the add/drop deadline, requests for late drop of courses will **NOT** be entertained unless under exceptional circumstances (e.g. medical grounds). Such late requests must be submitted no later than the end of the teaching period for the relevant semester/term for approval by the Head of the course-offering academic unit.

8. Laboratory safety

Students must observe the laboratory safety rules and regulations when they attend laboratory sessions or perform experiments in the laboratories.

1. Undergraduate students are NOT ALLOWED TO WORK in a laboratory WITHOUT SUPERVISION.
2. Undergraduate students are NOT ALLOWED TO KEEP ANY KEY of the laboratories.
3. New research students/staff are NOT ALLOWED TO WORK in a laboratory before the completion of the safety training.
4. Students/staff SHOULD NOT WORK ALONE in a laboratory; when he/she needs to work with hazardous chemicals, e.g., strong acids and alkalis or on electricity connection, there MUST be at least one more person in the same room. All research personnel should seek the help of a companion when he/she must work in the laboratory outside normal office hours, otherwise he/she is required to utilize the Personal Alarm System in PHY labs. Experiments should not be left unattended.
5. Prior approval from your supervisor is needed to stay in a laboratory beyond 11:00 p.m. Please download and print the [OVERNIGHT APPLICATION form](#) for application.
6. [SMOKING](#), EATING & DRINKING ARE STRICTLY FORBIDDEN. Do not bring food or drinks into a laboratory.
7. DO NOT RUN OR PLAY in laboratories.
8. Loose clothing is potentially hazardous. Secure ties and tie up [long hair](#). You are also advised to wear laboratory coat.
9. Familiarise yourselves with the FIRE EXITS and ESCAPE ROUTES. These are posted in every laboratory.
10. Familiarise yourself with [EMERGENCY PROCEDURES](#). These are posted at the entrance of each laboratory.
11. Wear gloves ONLY when working with hazardous chemicals and other materials. *No gloves* on door handles, keyboards, mouse etc.
12. [Wastes & solvents](#) must be disposed of properly. Consult your supervisor or the technicians in case of doubt.
13. Package non-hazardous lab glass waste items in specific cardboard boxes.
14. “Sharps waste” means any device having acute rigid corners, edges, or protuberances capable of cutting or piercing, including, but not limited to, all of the following: hypodermic needles, syringes, razor blades and scalpel blades. Under no circumstances should “sharps waste” be disposed of in the normal trash. Sharps must be disposed of in the sharp disposal bin.
15. All accidents must be reported to the technical officer/supervisor immediately.
16. Wearing EYE PROTECTION is mandatory when working with hazardous chemicals or operating UV instruments or LASERS, and in laboratories where such notices are posted. Consult your supervisor or the technicians for the appropriate type of eye-protection equipment. In other areas, you are encouraged to wear eye protection as a good safety practice. Users of laser classes 3B and 4 are reminded to undergo eye-sight tests arranged by the university. This should be carried out before the first use of laser and again before leaving the university.
17. There is a separate set of rules governing the use of Radiation Laboratories. These are posted at the entrance of the [Radiation Laboratory](#). All users must observe the [RADIATION SAFETY GUIDELINES](#).
18. Before commencement of a new experiment, you should complete a RISK ASSESSMENT (You may download the form [here](#)) and obtain approval from your supervisor.

For further details of safety guidelines, please refer to the PHY department website (<https://www.cityu.edu.hk/phy/students/Safety%20in%20Laboratories>).

Students **under 18** MUST complete the “Parental Consent Form for Students under the Age of 18” (https://www.cityu.edu.hk/phy_portal/download/6_UsefulForms/Parental%20Consent%20Form.pdf) in relation to Safety Regulations in Laboratories. The form should be signed by your parents and be returned to the General Office of Department of Physics (G6702, Green Zone, 6/F, Yeung Kin Man Academic Building) **by 5 September 2022**.

9. Communication Channels

There are various channels of communication between students and the Department. On an informal basis, students having academic difficulties are encouraged to approach their academic advisors, course leaders or tutors concerned.

A formal consultative channel between students and faculties is established via the Joint Staff/Student Consultative Committee (JSSCC) and Programme Committee. The Programme Committee is charged with the responsibility of monitoring the operation and quality assurance of the programme. 2-3 student representatives from each cohort will be nominated for joining the committees. The Committees meet at least once a semester. At the meetings, students can express their views on the curriculum and organization of the programme.

Students are also welcome to approach the major leaders, academic advisors or course leaders whenever they encounter any study-related difficulties.

Major Leader

Prof K S CHAN

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Deputy Major Leader

Dr W C YU

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Email: wingcyu@cityu.edu.hk

Academic Advisors

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Dr Bastien MICHON

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Prof Yang REN

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10. Useful information

10.1. Course registration for 2022-23

- For 2022-23, students will be pre-registered in some of the required courses in both Semester A and B. Please refer to Part 4: Recommended Study Plan for details.
- The web registration period for Semester A starts **from 22 August 2022 and ends on 5 September 2022** but **you need to check your time ticket from “AIMS”**. For details on course registration, please refer to “Course Registration” under ARRO website (www.cityu.edu.hk/arro).
- Please check your curriculum requirements, review your study plan and then make appropriate adjustments to your course registration **after consulting your academic advisors if necessary**.
- Add/Drop of courses can be made through AIMS for web-enabled courses during the web registration period.
- For non-web-enabled courses or waiving of registration restrictions for adding web-enabled courses, students can submit applications via an electronic form available in AIMS. If a student drops a course after the add/drop period, an ‘X’ grade will be assigned for the course. The ‘X’ grade will be printed on the student’s transcript.

Important notes

How to add/ drop web-enabled courses

- Go to CityU home page (www.cityu.edu.hk) and click “Students”.
- Log onto “AIMS” and then click “Course Registration”.
- Choose “Add or Drop Classes”.

How to add/ drop non web-enabled courses

- Go to CityU home page (www.cityu.edu.hk) and click “Students”.
- Log onto “AIMS” and then click “Course Registration”.
- Choose “Application for Add/Drop of Non Web-enabled Course & Study Load Adjustment”.

For details on course registration arrangements for 2022-2023, please refer to “Course Registration” under the ARRO website (www.cityu.edu.hk/arro).

10.2. How to access your personal class schedule

- Go to CityU home page (www.cityu.edu.hk).
- Log onto “e-Portal” under “Quick Links” or “My CityU”. *If you have problems in logging in, please follow the instructions in “Having problems logging in?”*.
- Select “View Student Schedule” under the “Courses I am taking” box.

- Click the “View Detail Schedule” button at the bottom of your timetable to display details of your class schedule.

10.3. How to get instructors’ handouts through Canvas

- Go to CityU home page (www.cityu.edu.hk).
- Log onto “Canvas” under “Quick Links”.
- Click “Courses” to see all the courses you have registered in current and previous semesters.

Canvas User Guides are available at “e-Learning” under the “IT Links” of the OCIO website (http://www6.cityu.edu.hk/elearn/elearn_stud.html).

10.4. How to check curriculum requirements and course syllabuses

- Go to CityU home page (www.cityu.edu.hk).
- Click “Academic Programmes”.

10.5. How to access your student email account

- Go to CityU home page (www.cityu.edu.hk).
- Click “Email” under “My CityU”
- Click “@my.cityu.edu.hk (office 365)”

**For email communication, please state your full name, student number, contact telephone number and programme.*

**Always check and clear your email account, and make sure it does not exceed the quota (a maximum of 25GB).*

10.6. How to access DegreeWorks

DegreeWorks is a web-based academic advising and degree audit tool for undergraduate students. It matches a student’s academic record against the curriculum requirements. It offers a user-friendly interface that helps students learn easily what courses they still need to take to fulfill the requirements of College/School, GE, major, minor, etc. It also facilitates communication between students and advisors.

Students are encouraged to use the “Planner” function in DegreeWorks. “Planner” helps you create a long term study plan for your degree completion. Using this tool, you can easily discuss your academic goals and plan with your Advisor.

- Go to CityU home page (www.cityu.edu.hk).
- Log onto “AIMS”.
- Go to the "Study Plan" tab in AIMS.
- Then you can view the Student advising worksheet and advising notes, and access other features available in DegreeWorks.

Important notes

Students are advised to go through the online tutorials and all materials available on ARRO’s website to learn more about DegreeWorks.

- Go to the ARRO home page (www.cityu.edu.hk/arro).

- Click “Current Students”.
- Choose “DegreeWorks”.
- Read “Introduction”, “Tutorials” and “Frequently Asked Questions”.

11. Student Development Services (SDS)

The SDS offers many student-centred services to students. It provides support and assistance for students in the following areas:

- Counselling Services
 - Psychological Counselling
 - Personal Development
 - Special Educational Needs (SEN)
- PE & Sports
- Financial Assistance
- Scholarships
- Career & Leadership

If you need any advice on your personal issues other than academic concerns, you may approach SDS to schedule a counselling appointment:

Tel.: 3442 8478

E-mail: sds@cityu.edu.hk

Address: Student Development Services, 6/F, Amenities Building

12. Contact Us

General Office

Address : G6702, Green Zone, 6/F, Yeung Kin Man Academic Building
 Office Hours : Monday to Friday
 8:45 am – 12:45 pm
 2:00 pm – 5:30 pm
 Telephone : (852) 3442 7831
 Fax : (852) 3442 0538
 Email : phy.go@cityu.edu.hk
 Website : www.cityu.edu.hk/phy

Lab Office

Email : phylaboratory@cityu.edu.hk

13. Other Information - Preventing Sexual Harassment

13.1. CASH tutorial

https://www.cityu.edu.hk/cash/studentlan/Online_Tutorial/



13.2. Web resources

Guidelines for Students: http://www.cityu.edu.hk/cash/cityu_sexual_harassment.htm



14. Appendix: Academic Staff Profile

STAFF

*Head of Department of Physics and
Chair Professor of Physics*

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PhD Iowa State University, USA
Fellow, American Physical Society
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Personal Secretary

Ms Sare W Y Lau

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*Associate Dean (Internationalisation) of
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*Associate Dean (Research) of College of
Science and Chair Professor of Physics*

Prof R Q Zhang

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Associate Head and Associate Professor

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AREAS OF SPECIALISM

Neutron and synchrotron scattering
Phase transformation, deformation,
magnetism, residual stress determination
Metallic glasses, nanostructured materials,
magnetic shape memory alloys

Synchrotron X-ray science
Neutron scattering
Phase transition
Materials physics
Energy materials
Correlated electron system

Surface, interface and microstructures of
functional materials
Vapor-solid interactions
Computational materials science
Nanoscience

Theoretical condensed matter physics
Spin quantum computation
Correlated electron system
Computational methods

Chair Professor of Physics

Prof Wei Bao

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Superconductivity
Quantum Magnetism
Strongly correlated systems
Neutron scattering

Prof Jeff Z Y Ou

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Atomic physics
Nonlinear optics
Quantum optics
Quantum information

Chair Professor of Materials Engineering

Prof Paul K Chu

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MSc PhD *Cornell University, USA*
Fellow, American Vacuum Society
Fellow, Institute of Electrical and
Electronics Engineers
Fellow, American Physical Society
Fellow, Materials Research Society
Fellow, Hong Kong Institution of
Engineers
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Plasma science and engineering
Surface engineering of functional materials
Biomaterials and nanobiology
Energy and sensor materials
Nanostructured thin films and interfaces

Professors

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Semiconductor physics
Photonics technology
Nanoscience and nanotechnology
Spintronics
Superconductivity

Prof S T Chu

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Integrated photonics
Sensors and sensing systems
Numerical methods

Prof K M Yu
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Ion Beam Analysis and Modification of
Materials
Defects in Semiconductors
Photovoltaic Materials
Nitride and Oxide semiconductors
Transparent Conductors

Prof Peter K N Yu
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Chartered Scientist, UK
Chartered Physicist, UK
Fellow, Institute of Physics, UK
Chartered Radiation Protection
Professional
Member, Society of Radiological
Protection, UK
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Engineers
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Radiation biophysics
Medical physics
Biointerfaces

Associate Professors

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Neutron and X-ray scattering
Biophysics
Protein dynamics
Quantum effects in biological systems
Protein-water interactions
Dynamics of liquids on biological and nano-
scale material surfaces

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Experimental quantum optics and quantum
information with superconducting circuits

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Optics
Nuclear magnetic resonance
Biophysics
Spectroscopy
Imaging

Assistant Professors

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Soft matter physics

Polymer thin films

Self-assembly of nanomaterials

Atomic force microscopy

Dr Liang Dai

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Technology of China, China

PhD *National University of Singapore,*
Singapore

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Computational soft matter and biophysics

Polymer knots

Interactions between antimicrobial peptides
and cell membranes

Nanopore translocation of DNA

Effects caused by macromolecular crowding

Dr Denver D F Li

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BEng *Zhejiang University, China*

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Low-dimensional superconductivity

Oxide thin films and heterostructures

Pulsed laser deposition

Oxide interface physics

Novel materials synthesis

Dr H X Li

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Single molecule electronics

Scanning tunneling microscopy

Fluorescence microscopy

Dr Xiao Li

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Theoretical and Computational Physics

Low-dimensional systems

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Neutron and Synchrotron X-ray Scattering

Energy Storage and conversion

Battery materials

Phase transition

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Condensed matter physics

Angle Resolved Photoemission

Spectroscopy

Synchrotron-Based Large facility
experiments

Topological physics

Unconventional Superconductivity

Correlation effect

Dr Bastien Michon

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Condensed Matter Physics
Fourier-Transform Infrared spectroscopy
Specific heat and transport measurements
Unconventional superconductors
Topological materials

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Metamaterials
Photonic crystals
Opto-mechanics
Computational electrodynamics

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Computational and theoretical condensed matter physics

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Computational methods
Machine learning
Soft matter physics

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Statistical mechanics