加速器光源科技與應用碩士學位學程

106 學年度

最低修業年限	一年
應修學分數	廿四學分
應修（應選）課程及符合畢業資格之修課相關規定	(一)本學位學程學生須選修同步輻射相關課程六學分（課程另列）且符合各組對應之研究所修業規定。

組別	對應系所
材料科學	碩：材料科學與工程學系碩士班、應用化學系碩士班
	博：材料科學與工程學系博士班、應用化學系博士班
電子工程	碩：電子研究所碩士班、電子物理系碩士班、物理研究所碩士班
	博：電子研究所博士班、電子物理系博士班、物理研究所博士班
光電工程	碩：光電工程學系研究所碩士班(光電所)、電子物理系碩士班、物理研究所碩士班
	博：光電工程學系研究所博士班、電子物理系博士班、物理研究所博士班
生物科技	碩：生物科技學系暨研究所、生物資訊及系統生物研究所、分子醫學與生物工程研究所
	博：生物科技學系暨研究所、生物資訊及系統生物研究所、分子醫學與生物工程研究所
環境工程	碩：環境工程研究所碩士班、
	博：環境工程研究所博士班、

(二) 本學程學生修業須按各組修課規定，且必須於「加速器光源科技與應用學位學程核心課程」中選擇六學分之課程（或經學位學程核定之類似課程）。

備註

加速器光源科技與應用學位學程核心課程

103.3.13　102 學年度第五次學程會議修正

類型		課程名稱	學分	備註
I	必修課程	同步加速器光源應用	3	擇一必修
		加速器工程	3	
		加速器科技	3	
II	專業課程	同步加速器光源在材料科學之應用(＊)	3	
		同步加速器光源在生命科學之應用	3	
		加速器物理 (I)	3	
		加速器物理 (II)	3	
		加速器應用電子學	3	
		先進影像顯微分析及奈米微影技術	3	
		X 光繞射與奈米影像學	3	
		X 光光學與光束線設計	3	
		同步加速器光源能譜學	3	
		同步輻射之 X 光散射	3	
		X 光繞射與應用	3	
		分子光譜	3	
		分子光化學	3	
		X 光繞射特論	3	
		新型同步輻射及中子設施之發展及科學	3	
		相對論光電子學 — 自由電子雷射	3	
		同步輻射 X 光散射研究(專題)	3	
		磁性物理與 X 光能譜	3	
		加速器光源技術在生物醫學之應用(專	3	
		同步輻射與凝態物理研究(專題)	3	

	*「同步加速器光源在材料科學之應用」為材料組學生必修

Graduate Program for Science and Technology of Accelerator Light Source
Course Requirements for Master Students

Academic year 2017

<table>
<tr><td>Minimum Term of Study</td><td>One year.</td></tr>
<tr><td>Minimum Credits</td><td>24 credists.</td></tr>
<tr><td>Curriculum and Regulations</td><td>
(A) Students who are enrolled in this degree program are required to select six credits of synchrotron radiation courses (courses are listed elsewhere) and meet the course requirements of the corresponding departments and institutes of the different divisions.
<table>
<tr><th>Division</th><th>Corresponding departments</th></tr>
<tr><td rowspan="2">Materials Science and Engineering</td><td>Master’s programs at the Departments of Materials Science and Engineering and Applied Chemistry</td></tr>
<tr><td>Doctoral programs at the Departments of Materials Science and Engineering and Applied Chemistry</td></tr>
<tr><td rowspan="2">Electronics Engineering</td><td>Master’s programs at the Graduate Institute of Electronics, the Department of Electrophysics, and the Graduate Institute of Physics</td></tr>
<tr><td>Doctoral programs at the Graduate Institute of Electronics, the Department of Electrophysics, and the Graduate Institute of Physics</td></tr>
<tr><td rowspan="2">Electro-Optical Engineering</td><td>Master’s programs at the Institute of Electro-Optical Engineering, the Department of Electrophysics, and the Graduate Institute of Physics</td></tr>
<tr><td>Doctoral programs at the Institute of Electro-Optical Engineering, the Department of Electrophysics, and the Graduate Institute of Physics</td></tr>
<tr><td rowspan="2">Biological Science and Technology</td><td>Master’s Program at the Graduate Institute of Bioinformatics and Systems Biology, the Department of Biological Science and Technology, the Graduate Institute of Molecular Medicine and Bioengineering</td></tr>
<tr><td>Doctoral Program at the Graduate Institute of Bioinformatics and Systems Biology, the Department of Biological Science and Technology, the Graduate Institute of Molecular Medicine and Bioengineering</td></tr>
<tr><td rowspan="2">Environmental Engineering</td><td>Master’s Program at the Graduate Institute of Environmental Engineering</td></tr>
<tr><td>Doctoral Program at the Graduate Institute of Environmental Engineering</td></tr>
</table>
(B) Course selection by students enrolled in this program must conform to the relevant regulations of the different divisions and students are required to select six credits of core courses offered by the Graduate Program for Science and Technology of Accelerator Light Source (or similar courses approved by the degree program)
</td></tr>
<tr><td>Notes</td><td>
Core Courses of Graduate Program for Science and Technology of Accelerator Light Source
Amended by the fifth session of the Program Committee in the Academic Year 2013 on March 13, 2014
<table>
<tr><th colspan="2">Course Type</th><th>Course Title</th><th>Cred</th><th>Note</th></tr>
<tr><td rowspan="3">I</td><td rowspan="3">Required Courses</td><td>Applications of Synchrotron Accelerator Light Source</td><td>3</td><td rowspan="3">Choose one of the three to fulfill the requirement. The other two can be elective professional courses.</td></tr>
<tr><td>Accelerator Engineering</td><td>3</td></tr>
<tr><td>Accelerator Technology</td><td>3</td></tr>
<tr><td rowspan="6">II</td><td rowspan="6">Elective Professional Courses.</td><td>Advanced Light Source in Materials Science Research (＊)</td><td>3</td><td rowspan="6"></td></tr>
<tr><td>Advanced Light Source in Life Science Research</td><td>3</td></tr>
<tr><td>Accelerator Physics (I)</td><td>3</td></tr>
<tr><td>Accelerator Physics (II)</td><td>3</td></tr>
<tr><td>Applied Electronics of Accelerator</td><td>3</td></tr>
<tr><td>Advanced Image Analysis and Nano Lithography</td><td>3</td></tr>
</table>
</td></tr>
</table>

			X-ray Diffraction and Nano-Imaging	3	
			X-ray Optics and Beamline Design	3	
			Spectroscopy of Synchrotron Accelerator Light Source	3	
			Synchrotron X-Ray Scattering	3	
			X-Ray Diffraction and Application	3	
			Molecular Spectroscopy	3	
			Molecular Photochemistry	3	
			Special Topics on X-ray Diffraction	3	
			Special Topics in Advanced X-Ray and Neutron Facilities and Sciences	3	
			Relativistic Photonics with emphasis on free-electron laser	3	
			Special Topics in Synchrotron X-Ray Scattering	3	
			Magnetism and X-ray Spectroscopy	3	
			Synchrotron Techniques in Biomedical Research	3	
			Synchrotron Radiation Research in Condensed Matter Physics	3	

*「Advanced Light Source in Materials Science Research」is a required course for the Students of Materials Science and Engineering Division

加速器光源科技與應用博士學位學程

106 學年度

最低修業年限	二年
應修學分數	符合各組對應之研究所修業規定學分數。
應修（應選）課程及符合畢業資格之修課相關規定	(一)本學位學程學生須選修同步輻射相關課程六學分（課程另列）且符合各組對應之研究所修業規定。

組別	對應系所
材料科學	碩：材料科學與工程學系碩士班、應用化學系碩士班
	博：材料科學與工程學系博士班、應用化學系博士班
電子工程	碩：電子研究所碩士班、電子物理系碩士班、物理研究所碩士班
	博：電子研究所博士班、電子物理系博士班、物理研究所博士班
光電工程	碩：光電工程學系研究所碩士班(光電所)、電子物理系碩士班、物理研究所碩士班
	博：光電工程學系研究所博士班、電子物理系博士班、物理研究所博士班
生物科技	碩：生物科技學系暨研究所、生物資訊及系統生物研究所、分子醫學與生物工程研究所
	博：生物科技學系暨研究所、生物資訊及系統生物研究所、分子醫學與生物工程研究所
環境工程	碩：環境工程研究所碩士班、
	博：環境工程研究所博士班、

(二) 本學程學生修業須按各組修課規定，且必須於「加速器光源科技與應用學位學程核心課程」中選擇六學分之課程（或經學位學程核定之類似課程）。

備註

加速器光源科技與應用學位學程核心課程

103.3.13　102 學年度第五次學程會議修正

類型		課程名稱	學分	備註
I	必修課程	同步加速器光源應用	3	擇一必修
		加速器工程	3	
		加速器科技	3	
II	專業課程	同步加速器光源在材料科學之應用(*)	3	
		同步加速器光源在生命科學之應用	3	

		加速器物理 (I)	3	
		加速器物理 (II)	3	
		加速器應用電子學	3	
		先進影像顯微分析及奈米微影技術	3	
		X 光繞射與奈米影像學	3	
		X 光光學與光束線設計	3	
		同步加速器光源能譜學	3	
		同步輻射之 X 光散射	3	
		X 光繞射與應用	3	
		分子光譜	3	
		分子光化學	3	
		X 光繞射特論	3	
		新型同步輻射及中子設施之發展及科學應用(專題討論)	3	
		相對論光電子學 — 自由電子雷射	3	
		同步輻射 X 光散射研究(專題)	3	
		磁性物理與 X 光能譜	3	
		加速器光源技術在生物醫學之應用(專題)	3	
		同步輻射與凝態物理研究(專題)	3	

***「同步加速器光源在材料科學之應用」為材料組學生必修**

Graduate Program for Science and Technology of Accelerator Light Source
Course Requirements for Doctoral Students
Academic year 2017

Minimum Term of Study	Two years
Minimum Credits	Meet the course requirements of the corresponding departments/institutes of the different divisions
Curriculum and Regulations	(A) Students who are enrolled in this degree program are required to select six credits of synchrotron radiation courses (courses are listed elsewhere) and meet the course requirements of the corresponding departments and institutes of the different divisions.

Division	Corresponding departments
Materials Science and Engineering	Master's programs at the Departments of Materials Science and Engineering and Applied Chemistry
	Doctoral programs at the Departments of Materials Science and Engineering and Applied Chemistry
Electronics Engineering	Master's programs at the Graduate Institute of Electronics, the Department of Electrophysics, and the Graduate Institute of Physics
	Doctoral programs at the Graduate Institute of Electronics, the Department of Electrophysics, and the Graduate Institute of Physics
Electro-Optical Engineering	Master's programs at the Institute of Electro-Optical Engineering, the Department of Electrophysics, and the Graduate Institute of Physics
	Doctoral programs at the Institute of Electro-Optical Engineering, the Department of Electrophysics, and the Graduate Institute of Physics
Biological Science and Technology	Master's Program at the Graduate Institute of Bioinformatics and Systems Biology, the Department of Biological Science and Technology, the Graduate Institute of Molecular Medicine and Bioengineering
	Doctoral Program at the Graduate Institute of Bioinformatics and Systems Biology, the Department of Biological Science and Technology, the Graduate Institute of Molecular Medicine and Bioengineering

Environmental Engineering	Master’s Program at the Graduate Institute of Environmental Engineering
	Doctoral Program at the Graduate Institute of Environmental Engineering

(B) Course selection by students enrolled in this program must conform to the relevant regulations of the different divisions and students are required to select six credits of core courses offered by the Graduate Program for Science and Technology of Accelerator Light Source (or similar courses approved by the degree program).

Notes

Core Courses of Graduate Program for Science and Technology of Accelerator Light Source

Amended by the fifth session of the Program Committee in the Academic Year 2013 on March 13, 2014

Course Type		Course Title	Credi	Note
I	Required Courses	Applications of Synchrotron Accelerator Light Source	3	Choose one of the three to fulfill the requirement. The other two can be elective professional courses.
		Accelerator Engineering	3	
		Accelerator Technology	3	
II	Elective Professional Courses.	Advanced Light Source in Materials Science Research (＊)	3	
		Advanced Light Source in Life Science	3	
		Accelerator Physics (I)	3	
		Accelerator Physics (II)	3	
		Applied Electronics of Accelerator	3	
		Advanced Image Analysis and Nano	3	
		X-ray Diffraction and Nano-Imaging	3	
		X-ray Optics and Beamline Design	3	
		Spectroscopy of Synchrotron Accelerator Light Source	3	
		Synchrotron X-Ray Scattering	3	
		X-Ray Diffraction and Application	3	
		Molecular Spectroscopy	3	
		Molecular Photochemistry	3	
		Special Topics on X-ray Diffraction	3	
		Special Topics in Advanced X-Ray and Neutron Facilities and Sciences	3	
		Relativistic Photonics with emphasis on free-electron laser	3	
		Special Topics in Synchrotron X-Ray	3	
		Magnetism and X-ray Spectroscopy	3	
		Synchrotron Techniques in Biomedical	3	
		Synchrotron Radiation Research in Condensed Matter Physics	3	

*「Advanced Light Source in Materials Science Research」is a required course for the Students of Materials Science and Engineering Division