

**Table I – Approved Courses for the
Graduate Certificate in Plasma Science and Engineering**

<u>Rubric</u>	<u>Course Title</u>	<u>Funda- mental</u>	<u>Techno logy</u>	<u>Lab</u>	<u>Support ing</u>
Aerospace Engineering					
AEROSP 523 (MECHENG 523)	Computational Fluid Dynamics I				X
AEROSP 532	Molecular Gas Dynamics				X
AEROSP 533 (ENSCEN 533)	Combustion Processes				X
AEROSP 536	Electric Propulsion		X		
Astronomy					
ASTRO 201	Introduction to Astrophysics				X (See Note 1)
ASTRO 402	Stellar Astrophysics				X
Climate and Space Sciences					
SPACE 101	Rocket Science				X (See Note 1)
SPACE 370 (EARTH 370)	Solar-Terrestrial Relations	X (See Note 1)			
SPACE 477	Space Weather Modeling	X			
CLIMATE 479 (ENSCEN 479)	Atmospheric Chemistry				X
SPACE 495 (ENSCEN 495)	Upper Atmosphere and Ionosphere	X			
SPACE 545 (NERS 672)	High Energy Density Physics	X	X		
CLIMATE 565 (SPACE 565)	Planetary Science				X
CLIMATE 567 (CHEM 567)	Chemical Dynamics				X
SPACE 571	Space Plasma Measurement Techniques		X	X	
CLIMATE 574 (AEROSP 574)	Introduction to Space Physics	X	X		
SPACE 595 (ECE 518)	Magnetosphere and Solar Wind	X			
SPACE 597 (AEROSP 597)	Fundamentals of Space Plasma Physics	X			
SPACE 598	The Sun and the Heliosphere	X			

Electrical Engr. & Computer Science					
EECS 423	Micro/Nano Device Fabrication and Characterization		X	X	
EECS 425	Integrated Microsystems Laboratory		X	X	
EECS 430 (SPACE 431) (CLIMATE 431)	Wireless Link Design				X
ECE 503	Introduction to Numerical Electromagnetics				X
ECE 510 (NERS 675)	Plasma Chemistry and Plasma Surface Interactions	X			
ECE 517 (NERS 578)	Low Temperature Plasmas	X	X		
ECE 519 (NERS 575)	Plasma Generation and Diagnostics Laboratory		X	X	
ECE 528	Principles of Microelectronics Process Technology		X		
ECE 530 (APPPHYS 530)	Electromagnetic Theory I				X
ECE 539 (APPPHYS 551) (PHYSICS 651)	Lasers				X
CSE 587	Parallel Computing				X
ECE 633	Numerical Methods in Electromagnetics				X
Materials Science and Engineering					
MSE 489	Materials Processing Design			X	X
Mathematics					
MATH 571	Numerical Linear Algebra				X
MATH 572	Numerical Methods for Differential Equations				X
Mechanical Engineering					
ME 523	Computational Fluid Dynamics I				X
ME 586	Laser Materials Processing		X		
Nuclear Engineering & Radiological Sciences					
NERS 425	Application of Radiation		X		
NERS 471	Introduction to Plasmas and Fusion	X			
NERS 472	Fusion Reactor Technology		X		

NERS 512	Interaction of Radiation and Matter				X
NERS 570 (ENGR 570)	Methods and Practice of Scientific Computing				X
NERS 571	Intermediate Plasma Physics I	X			
NERS 572 (APPPHY 672)	Intermediate Plasma Physics II	X			
NERS 573	Plasma Engineering	X	X		
NERS 574	Introduction to Computational Plasma Physics	X			
NERS 575 (ECE 519)	Plasma Generation and Diagnostics Laboratory		X	X	
NERS 576	Charged Particle Accelerators and Beams	X	X		
NERS 577	Plasma Spectroscopy	X			
NERS 578 (ECE 517)	Low Temperature Plasmas	X	X		
NERS 671	Theory of Plasma Confinement in Fusion Systems	X			
NERS 672 (SPACE 545)	High Energy Density Physics	X			
NERS 673	Electrons and Coherent Radiation	X			
NERS 674 (APPPHY 674)	High Intensity Laser-Plasma Interactions	X			
NERS 675 (ECE 510)	Plasma Chemistry and Plasma Surface Interactions	X			
Physics					
PHY 405	Intermediate Electricity and Magnetism				X
PHY 406	Statistical and Thermal Physics				X
PHY 505	Classical Field Theory and Electrodynamics I				X
PHY 506	Classical Field Theory and Electrodynamics II				X
PHY 510	Statistical Mechanics				X

Notes: 1. This course is of general interest for plasmas but does not count towards the 14 credits required for the GPSE.