

Course No.	459.571	Lecture No.	001	Course Title (Subtitle)	Special issue on radiation engineering (radiation source engineering)	Credit	3	
Representative Instructor	Name	Kyoung-Jae Chung (post : Asso. Prof. )			Homepage			
	E-mail	jkjsh1@snu.ac.kr			Phone No.	02-880-8338		
	Interview Time/Place :							
Attachment	(Korean)							
	(English)							
Prerequisite Course	Electromagnetics, Radiation Engineering, Fundamentals of Plasma							
*1.Purpose of Course	This lecture deals with radiation sources that generate artificial radiation. In particular, it will improve the understanding of the generation and transport of charged particle beams, and the generation of electromagnetic radiation via beam-cavity interaction, which is a core element technology of radiation generating devices.							
*2.Materials and Reference	<p>[Main text] Stanley Humphries, Jr., Charged Particle Beams (2002). Stanley Humphries, Jr., Principles of Charged Particle Acceleration (1999).</p> <p>[Reference] H. Zhang, Ion Sources (1999). Ian G. Brown, The Physics and Technology of Ion Sources (1989). Syed Naeem Ahmed, Physics &amp; Engineering of Radiation Detection, 2nd ed. (2015).</p>							
*3.Evaluation Method	Attendance	Task	Medium	Final	Random Evaluation	Attitude	Other	Total
	10	10	40	40	0	0	0	0
	Remark of Others							
*4.Lecture Plan	<ol style="list-style-type: none"> <li>1. Radiation sources</li> <li>2. Neutron sources</li> <li>3. Elementary ion sources</li> <li>4. Basic properties of plasmas</li> <li>5. Gas discharge fundamentals</li> <li>6. Gas breakdown and gas-filled detectors</li> <li>7. Phase-space description of charged particle beams</li> <li>8. Beam emittance</li> <li>9. Beam-generated forces</li> <li>10. Electron guns</li> <li>11. Extraction systems for ion sources</li> <li>12. High-power pulsed electron and ion diodes</li> <li>13. Paraxial beam transport with space charge</li> <li>14. Ion beam neutralization</li> <li>15. Generation of radiation with electron beams</li> </ol>							
5.References to Course Registration								
6. Support Services for Students with Disabilities	For Lectures							
	For Assignments & Evaluations							
	Others							

