Course No.	459.664	Lecture No.	001	Course Title (Subtitle)	Particle accelerator engineering	Credit	3

Representative Instructor				
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Interview Time/Place : 31-213				

Attachment	
(Korean)	
(English)	

Prerequisite Course	Engineering mathematics, Electromagnetics

*1.Purpose of Course	This lecture deals with particle accelerators which are essential for artificial radiation generation and application. This course deals with the motion of a charged particle in electric and magnetic fields, and the principles of an electrostatic accelerator, an induction accelerator, a high frequency accelerator, and a circular accelerator.

*2.Materials and Reference	[Text] Stanley Humphries, Jr., Principles of Charged Particle Acceleration (1999). Stanley Humphries, Jr., Charged Particle Beams (2002). H. Zhang, Ion Sources (1999). Ian G. Brown, The Physics and Technology of Ion Sources (2004).

*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	1. Introduction 2. Particle dynamics 3. Fundamentals of electric and magnetic fields 4. Electric and magnetic field lenses 5. Calculation of particle orbits in focusing fields 6. Transfer matrices and periodic focusing systems 7. Phase space and beam emittance 8. Beam-generated forces 9. Space-charge-limited flows 10. Electron guns 11. Ion sources 12. Transmission line theory 13. Electrostatic accelerators and pulsed high voltage 14. Beam-cavity interactions 15. Radio-frequency linear accelerators 16. Cyclotrons and synchrotrons

5.References to Course Registration	

6. Support Services for Students with Disabilities	For Lectures	
	For Assignments & Evaluations	
	Others	