

강 의 계 획 서(Syllabus)

[1] 기본 정보(Basic Information)

■ 강의 정보(Course Information)

교과목명 (Course Title)	전산물리학 (COMPUTATIONAL PHYSICS)	강의유형 (Course Type)	이론(Theoretical course)
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[2] 학습 목표/성과(Learning Objectives/Outcomes)

■ 과목 설명(Course Description)

We study basic concepts and applications of computational physics, which is playing an increasingly important role. Characteristics of various physics problems are presented and corresponding algorithms and concrete application of computer programs are studied.

■ 학습 목표(Learning Objectives)

By studying fundamentals of numerical analysis for physics research and problem solving, students are expected to develop capability of approaching new problems. By experiencing research with computers, current research trends and methodology are understood and the perspective of physics is extended.

■ 학습 성과(Learning Outcomes)

You will be able to
(1) understand numerical methods.
(2) apply methods of computational physics to physics problems.
(3) understand simulations.

[3] 강의 진행 정보(Course Methods)

■ 강의 진행 방식(Teaching and Learning Methods)

강의 진행 방식	추가 설명
오프라인 강의	Main contents are covered by lecture, and supplementary materials are also used.

■ 수업 자료(Textbooks, Reading, and other Materials)

수업 자료	제목	저자	출판일/게재일	출판사/학회지
주교재(Main Textbook)	An Introduction to Computational Physics	Tao Pang	2010	Cambridge University Press

[4] 수업 일정(Course Schedule)

차시	강사명	수업주제 및 내용	제출 과제	추가 설명
1	윤영귀	Introduction to computational physics		
2	윤영귀	Introduction to programming		
3	윤영귀	Numerical calculus		
4	윤영귀	Ordinary differential equation and the Euler and Picard method		
5	윤영귀	Predictor-corrector methods and the Runge-Kutta method		
6	윤영귀	Chaotic dynamics of a driven pendulum		
7	윤영귀	Midterm exam		
8	윤영귀	Boundary-value and eigenvalue problems		
9	윤영귀	The one-dimensional Schrodinger equation		
10	윤영귀	Matrices in physics: basic matrix operations and linear equation systems		
11	윤영귀	Zeros and extremes of a multivariable function		
12	윤영귀	Eigenvalue problems		
13	윤영귀	Electronic structure of atoms		
14	윤영귀	Final exam		

[5] 수강생 학습 안내 사항

Students are expected to have good results with systematic study in accordance with the syllabus.