SYLLABUS

Date: .2017. 01. 13.

Course Name	Advanced Engineering Mathematics (공학수학)	**Credit**	3 credits (3 학점)
Instructor	John G. Fisher	**Class time**	Mon 13:00 – 14:50, Wed 13:00–13:50 (월 5, 6교시, 수 5교시)
Depart-ment	School of Materials Science and Engineering (신소재 공학부)	**Classroom**	Engineering building 6 Room 107 (강의실 공6-107)
Office	Engineering building 6 Room 315 (공대6호관315호)	**Counsel Hours**	Tuesday (화요일) 11:00 am
Contact Number		**E-mail**	
TA	-	**Course Grade**	2nd year undergraduate (학부2학년)
Classifica-tion	전선	**Pre-requisites**	-
Program Outcomes	*1, 2, 3*		
Course Overview	Introduction to differential equations, First-order differential equations, Higher-order differential equations, the Laplace Transform. The course will be grading using absolute grading (절대평가).		
Lecture objectives	To teach the theory and applications of ordinary differential equations.		
Teaching Methods	Powerpoint presentation, homework		

Grading System	Attendance, homework, mid-term exam, final exam
References	Advanced Engineering Mathematics: 4th Edition, Dennis G. Zill and Warren S. Wright, Jones & Bartlett Learning. notes prepared by the lecturer (강사가 준비한 자료)

[Relation with Program Outcomes]

No.	Program Outcomes	Weight	CEATool
1	An ability to apply the knowledge of mathematics, basic science, engineering and information technology to solve the engineering problems.	120	-
2	An ability to analyze data and experimentally verify the given facts or hypotheses.	90	-
3	An ability to define and formulate the engineering problems.	90	-

※ 해당 교과목과 관련 학습성과에 대하여 학점당 100점(1학점=100, 3학점=300)으로 표시

※ 교과기반 학습성과 평가 항목의 경우 CEA Tool에 평가도구를 기재

[Weekly Schedule]

Week	Description	Remarks
1	Course introduction and review of basic differentiation	
2	Introduction to Differential Equations - Definitions and Terminology	
3	Introduction to Differential Equations - Initial-Value Problems	
4	Introduction to Differential Equations - Differential Equations as Mathematical Models	
5	First-Order Differential Equations - Solution curves, separable equations and linear equations	
6	First-Order Differential Equations - Exact equations, solutions by substitutions and a numerical method	
7	First-Order Differential Equations - linear models, nonlinear models and modeling with systems of first-order differential equations	
8	Midterm Exam	

9	Higher-Order Differential Equations - Theory of linear equations, reduction of order, homogeneous linear equations and undetermined coefficients	
10	Higher-Order Differential Equations - Variation of parameters, Cauchy-Euler equation, nonlinear equations and linear models	
11	Higher-Order Differential Equations - Linear models, Green's functions, nonlinear models and solving systems of linear equations	
12	The Laplace Transform - Definition of the Laplace transform, the inverse transform and transforms of derivatives	
13	The Laplace Transform - Translation theorems and additional operational properties	
14	The Laplace Transform - the Dirac Delta function and systems of linear differential equations	
15	Final Exam	