

東京工業高等専門学校		開講年度	令和03年度 (2021年度)	授業科目	応用数理学 (開講なし)		
科目基礎情報							
科目番号	0013		科目区分	専門 / 選択			
授業形態	講義		単位の種別と単位数	学修単位: 2			
開設学科	機械情報システム工学専攻		対象学年	専1			
開設期	前期		週時間数	2			
教科書/教材	「数値解析入門」 (山本哲朗、サイエンス社)、「数値計算の常識」 (伊理正夫・藤野和建、共立出版)						
担当教員							
目的・到達目標							
Understand how to deal with mathematical problems using numerical methods from analytical viewpoint. Understand algorithms and procedures correctly and implement them on computers.							
ルーブリック							
	Excellent	Good	Satisfactory	Unsatisfactory			
Algorithms	Understand each algorithm and the mathematical theory which is the base of it	Understand each algorithm and some mathematical theory which is the base of it	Understand each algorithms	Don't understand algorithms			
Implementation	Implement each algorithm as a program and make sure the theory	Implement each algorithm as a program	Implement each algorithm as a program	Don't implement algorithms			
English	Know words and expressions to describe these theories	Know important expressions to describe these theories	Know some expressions to describe these theories	Don't know words and expressions to describe these theories			
学科の到達目標項目との関係							
JABEE (C) 学習・教育目標 C1							
教育方法等							
概要	This course is designed to give an overview of the design, analysis and implementation of the several fundamental numerical method which are used to solve practical engineering problems.						
授業の進め方と授業内容・方法	Applied Mathematics consists of 10 lectures, that emphasis the mathematics used to design numerical methods, and to analyse their properties. and 5 experiments with implementing algorithms in Computer Lab.						
注意点	Prerequisite: Calculus Multivariable Calculus, Linear Algebra, Ordinary Differential Equation, Programming						
授業の属性・履修上の区分							
<input type="checkbox"/> アクティブラーニング		<input type="checkbox"/> ICT 利用		<input type="checkbox"/> 遠隔授業対応		<input type="checkbox"/> 実務経験のある教員による授業	
授業計画							
		週	授業内容・方法	週ごとの到達目標			
前期	1stQ	1週	Guidance and Introduction				
		2週	Error	Understand why errors are occurred in computer			
		3週	Linear Equations System and Matrices- Gaussian Elimination	Understand the algorithm			
		4週	Linear Equations System and Matrices- Iterative Method 1	Understand the algorithm			
		5週	Linear Equations System and Matrices - Iterative Method 2	Understand the algorithm			
		6週	Exercise in Computer Lab.	Impliment the algorithmn			
		7週	Non-linear Equations - Bisection Method, Secant Method	Understand the algorithm			
		8週	Non-linear Equations- Quadrature Mensuration by parts, Newton Method	Understand the algorithm			
	2ndQ	9週	Exercise in Computer Lab.	Impliment the algorithmn			
		10週	Numerical Integration -Trapezium Rule & Sympson's Rule	Understand the algorithm			
		11週	Numerical Integration - Monte Carlo Method	Understand the algorithm			
		12週	Exercise in Computer Lab.	Impliment the algorithmn			
		13週	Ordinary Differential Equation -Euler Method	Understand the algorithm			
		14週	Ordinary Differential Equation- Runge-Kutta Method	Understand the algorithm			
		15週	Exercise in Computer Lab.	Impliment the algorithmn			
		16週	Final Examination				
評価割合							
	試験	発表	相互評価	態度	ポートフォリオ	その他	合計
総合評価割合	0	0	0	0	0	100	100
基礎的能力	0	0	0	0	0	100	100
専門的能力	0	0	0	0	0	0	0
分野横断的能力	0	0	0	0	0	0	0