

# BOĞAZIÇI UNIVERSITY



## Institute of Biomedical Engineering

### SYLLABUS

#### Mathematics for Biomedical Engineering Course

#### Fall Semester

Course Code	Course Name	Course Type	Weekly Hours			Credits	ECTS	Campus / Weekly Time & Classroom Schedule
			T	A	L			
BM 531	Numerical Methods and C/C++ Programming	Elective	3	1	0	3	9	To be arranged.
<b>Prerequisite</b>	<b>Prerequisite to</b>							
<b>Course Lecturers</b>	Ahmet Ademoğlu					<b>Office Hours Schedule</b>		
<b>E-mail</b>	<a href="mailto:ademoglu@bogazici.edu.tr">ademoglu@bogazici.edu.tr</a>							
<b>Phone</b>	0216 516 3447					<b>Office / Room No</b>	A1-05	
<b>Teaching Assistant</b>	Hüden Neşe					<b>Phone</b>	0216 516 3447	
<b>E-mail</b>	<a href="mailto:hudennese@gmail.com">hudennese@gmail.com</a>					<b>Office / Room No</b>	A1-05	
<b>Course Objectives</b>	The course begins with an overview of ANSI C programming language. Numerical computation techniques are reviewed. The C programming language is employed for solving several numerical problems including linear systems of equations, ordinary and partial differential equations, interpolation and curve fitting. Object-oriented Programming with C++ is also studied for numerical applications.							
<b>Textbooks/References</b>	1	<i>Numerical Recipes in C, The Art of Scientific Computing, W. P. Press et al., Cambridge Univ. Press, 2007</i>						
	2	<i>The C Programming Language, B.W. Kernighan and D.M.Ritchie, Second Edition, Prentice Hall, 1988</i>						
	3	<i>C++ Primer, Stanley B. Lippman Josée Lajoie Barbara E. Moo, 5th Edition, Addison-Wesley, 2013</i>						
<b>Learning Outcomes</b>	1	ANSI C Programming Syntax						
	2	Object Oriented Programming with C++ Syntax						
	3	Developing Numerical Classes						
	4	Using C/C++ for Solving Numerical Problems						
<b>Teaching Methods</b>	Lecturing, assignments and tutorials.							
<b>WEEK</b>	<b>Subject studied for that week</b>							<b>Resources</b>
Week 1	Basic Syntax of C Language							
Week 2	Basic Syntax of C Language continued							
Week 3	Basic Syntax of C Language continued							
Week 4	Object Oriented Programming and Syntax of C++							
Week 5	Object Oriented Programming and Syntax of C++ continued							
Week 6	Building Numerical Classes							
Week 7	I. Midterm Exam							
Week 8	Computer Arithmetic and Number Representation							
Week 9	Solution of Linear System of Equations							
Week 10	Interpolation, Approximation and Regression							
Week 11	Numerical Differentiation and Integration							
Week 12	Solution of Ordinary and Partial Differential Equations							
Week 13	Optimization							
Week 14	II. Midterm Exam							
Week 15	Final Exam							
<b>Assessment Methods and Criteria</b>	<b>Evaluation Tool</b>		<b>Quantity</b>	<b>Date</b>			<b>Weight in %</b>	
	Final Exam		1				25	
	Semester Evaluation						75	
	Midterm exams		2				40	
Homework Assignments		10				35		
<b>*** ECTS</b>						<b>Language of Instruction: English</b>		
<b>Evaluation Tool</b>	<b>Hour</b>	<b>Quantity</b>	<b>Student Workload</b>	<b>Evaluation Tool</b>	<b>Hour</b>	<b>Quantity</b>	<b>Student Workload Hours</b>	
Theoretical hours	3	14,0	39	Midterm Exam	10	2	20,0	
Preclass self study	4	14,0	52	Final Exam	20	1	20,0	
Postclass self study	4	14,0	52	Assignments	10	4	40,0	
<b>GENERAL TOTAL HOURS:</b>							223,0	
<b>Recommended ECTS Credit (Total Hours / 25) :</b>							9	