



**TECHNO INDIA UNIVERSITY**  
WESTBENGAL

# **Syllabus for 4-Years B.Sc. (H) in Computational Mathematics**



**Department of Mathematics**

**Techno India University, West Bengal  
EM-4, EM Block, Sector V, Bidhannagar,  
Kolkata -700091, West Bengal**



## 4- Years B.Sc. (H) in Computational Mathematics

### Course Curriculum

#### *Semester I*

Sl. No.	Course Code	Course Title	Contact Hrs. / Week			Credit	Page No.
			L	T	P		
<b>Theory</b>							
1	BCM101_TIU	Calculus I	03	00	00	3	
2	BCM102_TIU	Linear Algebra	03	00	00	3	
3	BCM103_TIU	Object Oriented Programming I	03	01	00	4	
4	BCM104_TIU	Real Analysis	04	00	00	4	
5	BCM105_TIU	Applied English (Pattern: TOEFL, IELTS)	02	00	00	2	
<b>Practical</b>							
2	BCM102L_TIU	Object oriented Programming I: LAB	00	00	02	2	
<b>Total Credit</b>						18	



*Semester II*

Sl. No.	Course Code	Course Title	Contact Hrs. / Week			Credit	Page No.
			L	T	P		
<b>Theory</b>							
1	BCM201_TIU	Abstract Algebra I	04	00	00	4	
2	BCM202_TIU	Discrete Mathematics	03	00	00	3	
3	BCM203_TIU	Object Oriented Programming II	04	00	00	4	
4	BCM204_TIU	Probability and Statistics	04	00	00	4	
6	BCM205_TIU	Calculus II	03	00	00	3	
<b>Practical</b>							
1	BCM201L_TIU	Object Oriented Programming II: LAB	00	00	02	2	
<b>Total Credit</b>						20	



*Semester III*

Sl. No.	Course Code	Course Title	Contact Hrs. / Week			Credit	Page No.
			L	T	P		
<b>Theory</b>							
1	BCM301_TIU	Differential Equations	04	00	00	4	
2	BCM302_TIU	Data Structure	04	00	00	4	
3	BCM303_TIU	Abstract Algebra II	04	00	00	4	
4	BCM304_TIU	Graph Theory and Applications	04	00	00	4	
<b>Practical</b>							
1	BCM301L_TIU	Graph Theory and Applications: LAB	00	00	02	3	
2	BCM302L_TIU	Data Structure: LAB	00	00	02	3	
<b>Total Credit</b>						22	



*Semester IV*

Sl. No.	Course Code	Course Title	Contact Hrs. / Week			Credit	Page No.
			L	T	P		
<b>Theory</b>							
1	BCM401_TIU	Number Theory	04	00	00	4	
2	BCM402_TIU	Game Theory	02	00	00	2	
3	BCM403_TIU	Introduction to Algorithms	04	00	00	4	
4	BCM404_TIU	Applied Statistics	04	00	00	4	
5	BCM405_TIU	Partial Differential Equations	03	00	00	3	
<b>Practical</b>							
1	BCM401L_TIU	Introduction to Algorithms: LAB	00	00	02	2	
2	BCM402L_TIU	Applied Statistics: LAB	00	00	02	2	
<b>Total Credit</b>						21	



*Semester V*

Sl. No.	Course Code	Course Title	Contact Hrs. / Week			Credit	Page No.
			L	T	P		
<b>Theory</b>							
1	BCM501_TIU	Complex Analysis	03	00	00	3	
2	BCM502_TIU	Combinatorics	03	01	00	4	
3	BCM503_TIU	Classical Mechanics	03	00	00	3	
4	BCM504_TIU	Numerical Methods	04	00	00	4	
5	BCM505_TIU	Soft Computing	03	00	00	3	
<b>Practical</b>							
1	BCM501L_TIU	Numerical Methods : LAB	00	00	02	2	
<b>Total Credit</b>						19	



*Semester VI*

Sl. No.	Course Code	Course Title	Contact Hrs. / Week			Credit	Page No.
			L	T	P		
<b>Theory</b>							
1	BCM601_TIU	Concrete Mathematics	03	00	00	3	
2	BCM602_TIU	Mathematical Modelling	03	00	00	3	
3	BCM603_TIU	Introduction to AI & Machine Learning	03	00	00	3	
4	BCM604_TIU	Computational Geometry	04	00	00	4	
5	BCM605_TIU	Integral Equation	03	00	00	3	
<b>Practical</b>							
1	BCM601L_TIU	Computational Geometry: LAB	00	00	02	2	
2	BCM602L_TIU	AI & Machine Learning: LAB	00	00	02	2	
<b>Total Credit</b>						20	



*Semester VII*

Sl. No.	Course Code	Course Title	Contact Hrs. / Week			Credit	Page No.
			L	T	P		
<b>Theory</b>							
1	BCM701_TIU	Theory of Computations	04	00	00	4	
	BCM702_TIU	Pattern Recognition and Neural Networks	04	00	00	4	
2	BCM703_TIU	Reinforcement Learning	04	00	00	4	
4	BCM704_TIU	Integral Transforms	04	00	00	4	
<b>Practical</b>							
1	BCM701L_TIU	Neural Networks: LAB	00	00	02	2	
2	BCM702L_TIU	Reinforcement Learning: LAB	00	00	02	2	
<b>Total Credit</b>						20	





*Semester VIII*

Sl. No.	Course Code	Course Title	Contact Hrs. / Week			Credit	Page No.
			L	T	P		
<b>Theory</b>							
1	BCM801_TIU	Elective I: <ul style="list-style-type: none"><li>• Image Processing and Computer Vision</li><li>• Cryptography</li><li>• Natural Language Processing</li></ul>	03	01	00	4	
2	BCM802_TIU	Project: Grand Viva	06	00	00	6	
3	BCM803_TIU	Advanced Algorithm	03	00	00	3	
4	BCM804_TIU	Project	04	00	00	4	
<b>Practical</b>							
1	BCM801L_TIU	Elective I: LAB	00	00	02	3	
<b>Total Credit</b>						20	