

# **Bachelor of Science (Hons.) Mathematics**

**Programme Code:MTB**

**Duration: 3 Years**

**Detailed Syllabus with Scheme of Examination**

**FROM SESSION: 2019-2020 ONWARDS**



**Department of Mathematics  
Faculty of Science**

**CHHATRAPATI SHIVAJI MAHARAJ UNIVERSITY  
PANVEL, NAVI MUMBAI**

## PROGRAMME SCHEME

Semester	Department Specific Core Course			General Elective Course	Ability Enhancement Core Course	Skill Enhancement Course	Weekly Contact	Total Credit
<b>I</b>	DSC-1 Algebra (5-1-0) 6	DSC-2 Numerical Methods (5-1-0) 6		GE-1 Generic Elective -1 (4-0-4) 6	AECC -1 English Communications (2-0-0) 2		<b>26</b>	<b>20</b>
<b>II</b>	DSC-3 Differential Calculus & Vector Calculus (5-1-0) 6	DSC-4 Group Theory I (5-1-0) 6		GE-2 Generic Elective -2 (4-0-4) 6	AECC -2 Environmental Science (2-0-0) 2		<b>26</b>	<b>20</b>
<b>III</b>	DSC-5 Differential Equation (5-1-0) 6	DSC-6 PDE and Systems of ODE (5-1-0) 6	DSC-7 Theory of Real Functions (5-1-0) 6	GE-3 Generic Elective -3 (4-0-4) 6		SEC -1 Skill Enhancement Courses -1 (2-0-0) 2	<b>34</b>	<b>26</b>
<b>IV</b>	DSC-8 Real Analysis (5-1-0) 6	DSC-9 Riemann Integration and Series of Functions (5-1-0) 6	DSC-10 Ring Theory and Linear Algebra I (5-1-0) 6	GE-4 Generic Elective -4 (4-0-4) 6		SEC -2 Skill Enhancement Courses -2 (2-0-0) 2	<b>34</b>	<b>26</b>
<b>V</b>	DSC-11 Multivariate Calculus (5-1-0) 6	DSC-12 Group Theory II (5-1-0) 6	DSE-1 Discipline Specific Elective-1 (5-1-0) 6	DSE-2 Discipline Specific Elective-2 (5-1-0) 6			<b>32</b>	<b>24</b>
<b>VI</b>	DSC-13 Metric Spaces and Complex Analysis (5-1-0) 6	DSC-14 Ring Theory and Linear Algebra II (5-1-0) 6	DSE-3 Discipline Specific Elective-3 (5-1-0) 6	DSE-4 Discipline Specific Elective-4 (5-1-0) 6			<b>32</b>	<b>24</b>
<b>Total</b>								<b>140</b>

**Teaching & Evaluation Scheme  
SEMESTER I**

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	MTBC101	Algebra	5	1	0	30	70	100	6
DSC	MTBC102	Numerical Methods	5	1	0	30	70	100	6
GE	*BG101	General Elective - I	4	0	0	30	70	100	4
AECC	ENBC101	English Communication	2	0	0	15	35	50	2
GE	*BG101	General Elective - I Lab	0	0	4	15	35	50	2
<b>Total</b>			<b>16</b>	<b>2</b>	<b>4</b>	<b>120</b>	<b>280</b>	<b>400</b>	<b>20</b>

**SEMESTER II**

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	MTBC201	Differential Calculus & Vector Calculus	5	1	0	30	70	100	6
DSC	MTBC202	Group Theory I	5	1	0	30	70	100	6
GE	**BG201	Generic Elective - II	4	0	0	30	70	100	4
AECC	AECC201T	Environmental Science	2	0	0	15	35	50	2
GE	**BG201	Generic Elective - II Lab	0	0	4	15	35	50	2
<b>Total</b>			<b>16</b>	<b>2</b>	<b>4</b>	<b>120</b>	<b>280</b>	<b>400</b>	<b>20</b>

**SEMESTER III**

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	MTBC301	Differential Equation	5	1	0	30	70	100	6
DSC	MTBC302	PDE and System of ODE	5	1	0	30	70	100	6
DSC	MTBC303	Theory of Real Functions	5	1	0	30	70	100	6
GE	**BG301	Generic Elective - III	4	0	0	30	70	100	4
SEC	MTBS30*	Skill Enhancement	2	0	0	15	35	50	2

		Course-I							
GE	**BG391	Generic Elective - III Lab	0	0	4	15	35	50	2
		<b>Total</b>	<b>21</b>	<b>3</b>	<b>4</b>	<b>150</b>	<b>350</b>	<b>500</b>	<b>26</b>

#### SEMESTER IV

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	MTBC401	Real Analysis I	5	1	0	30	70	100	6
DSC	MTBC402	Riemann Integration and Series of Functions	5	1	0	30	70	100	6
DSE	MTBC403	Ring Theory and Linear Algebra I	5	1	0	30	70	100	6
GE	**BG401	Generic Elective - IV	4	0	0	30	70	100	4
SEC	MTBS401	Operating System: Linux	2	0	0	15	35	50	2
GE	**BG491	Generic Elective - IV Lab	0	0	4	15	35	50	2
		<b>Total</b>	<b>21</b>	<b>3</b>	<b>4</b>	<b>150</b>	<b>350</b>	<b>500</b>	<b>26</b>

#### SEMESTER V

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	MTBC501	Multivariate Calculus	5	1	0	30	70	100	6
DSC	MTBC502	Group Theory II	5	1	0	30	70	100	6
DSE	MTBE50*	Discipline Specific Elective-I	5	1	0	30	70	100	6
DSE	MTBE50*	Discipline Specific Elective-II	5	1	0	30	70	100	6
		<b>Total</b>	<b>20</b>	<b>4</b>	<b>00</b>	<b>120</b>	<b>280</b>	<b>400</b>	<b>24</b>

#### SEMESTER VI

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	MTBC601	Metric Spaces and Complex Analysis	5	1	0	30	70	100	6
DSC	MTBC602	Ring Theory and Linear Algebra II	5	1	0	30	70	100	6
DSE	MTBE60*	Discipline Specific Elective-III	5	1	0	30	70	100	6
DSE	MTBE60*	Discipline Specific Elective-IV	5	1	0	30	70	100	6
		<b>Total</b>	<b>20</b>	<b>4</b>	<b>0</b>	<b>120</b>	<b>280</b>	<b>400</b>	<b>24</b>

**Ability Enhancement Compulsory Courses (AECC)**

Semester	Offering Department	Course Code (T+P)	Course Name	(L-T-P)	Credits
I	English	ENBC101	English Communication	2-0-0	2
II	Basic Sciences	ESBC201	Environmental Science	2-0-0	6

**List of Generic Electives Available for students of B.Sc. (Hons.) Mathematics**

Semester	Offering Department	Course Code (T+P)	Course Name	(L-T-P)	Credits
I	Physics	PHBG102+P HBG192	Mechanics	4-0-4	6
II	Physics	PHBG202+P HBG292	Thermal Physics	4-0-4	6
III	Physics	PHBG302+P HBG392	Waves and Optics	4-0-4	6
IV	Physics	PHBG402+P HBG492	Elements of Modern Physics	4-0-4	6
I	Chemistry	CHBG101+ CHBG191	Inorganic Chemistry	4-0-4	6
II	Chemistry	CHBG201+ CHBG291	Organic Chemistry	4-0-4	6
III	Chemistry	CHBG301+ CHBG391	Physical Chemistry	4-0-4	6
IV	Chemistry	CHBG401+ CHBG491	Basic Analytical Chemistry	4-0-4	6

**List of Generic Electives offered by Department of Mathematics for students in B.Sc. (Hons.) Physics, and B.Sc. (Hons.) Chemistry**

Semester	Course Code (T+P)	Course Name	(L-T-P)	Credits
I	MTBG101	Algebra	5-1-0	6
II	MTBG201	Differential Calculus & Vector Calculus	5-1-0	6
III	MTBG301	Differential Equation	5-1-0	6
IV	MTBG401	Real Analysis	5-1-0	6

**List of Department-Specific Electives (DSE-1 to DSE-4) offered by Department of Mathematics for students in B.Sc. (Hons.) (4 to be selected, 2 in each of 5th and 6th semester)**

Semester	Course Code (T+P)	Course Name	(L-T-P)	Credits
V	MTBE501	Probability and Statistics	5-1-0	6
V	MTBE502	Analytical Geometry	5-1-0	6
V	MTBE503	Theory of Equations	5-1-0	6
V	MTBE504	Industrial Mathematics	5-1-0	6
VI	MTBE601	Linear Programming	5-1-0	6
VI	MTBE602	Boolean Algebra and Automata Theory	5-1-0	6
VI	MTBE603	Mathematical Modeling	5-1-0	6
VI	MTBE604	Mechanics	5-1-0	6

**List of Skill Enhancement Course (SEC-1 & SEC-2) offered by Department of Physics (Any 2 to be selected)**

Semester	Course Code	Course Name	(L-T-P)	Credits
III	MTBS391	Computer Graphics	0-0-2	2
III	MTBS392	Logic and Sets	0-0-2	2
IV	MTBS491	Operating System: Linux	0-0-2	2

**Department Specific Course (DSC), Department Specific Elective (DSE), Generic Elective Course (GE), Skill Enhancement Course (SEC), Ability Enhancement Core Course (AECC)**