

**SYLLABUS AND SCHEME OF STUDIES  
FOR  
ASSOCIATE DEGREE (2 YEARS)  
AND  
BS-MATHEMATICS (4-YEARS)  
PROGRAMS**



**Approved by**

Board of Studies in his second meeting held on November 3<sup>rd</sup>, 2023

**Department of Mathematics  
FATA University  
TSD Darra, NMD Kohat**

# ANNEXURE-I

## Scheme of Studies for Associate Degree in Mathematics (2-year) Program

S. No.	Course Code	Course Title	Course Nature	Cr. Hrs.
<b>1st Year</b>				
<b>Semester 1</b>				
1	NS-311	Physics	General Education (Natural Science)	3(3,0)
2	FE-312	Functional English	General Education (Functional English)	3(3,0)
3	QR-313	Introduction to Mathematics	General Education (Qualitative Reasoning)	3(3,0)
4	MATH-311	Calculus-I	Major	3(3,0)
5	MATH-312	Elements of Set Theory and Mathematical Logic	Major	3(3,0)
<b>Total Cr. Hrs</b>				<b>15</b>
<b>Semester 2</b>				
6	ICP-321	Ideology and Constitution of Pakistan	General Education	2(2,0)
7	AH-322	Introduction to Pashto Literature	General Education (Arts & Humanities)	2(2,0)
8	ISL-323	Islamic Studies	General Education (Islamic Studies)	2(2,0)
9	MATH-321	Calculus-II	Major Course	3(3,0)
10	MATH-322	Fundamental of Mathematics	Major Course	3(3,0)
11	MATH-323	Mechanics	Major Course	3(3,0)
<b>Total Cr. Hrs</b>				<b>15</b>
<b>2nd Year</b>				
<b>Semester 3</b>				
12	SS-431	Introduction to Psychology	General Education (Social Science)	2(2,0)
13	EN-432	Entrepreneurship	General Education	2(2,0)
14	EW-433	Expository Writing	General Education (Expository Writing)	3(3,0)
15	CCE-434	Civic and Community Engagement	General Education	2(2,0)
16	MATH-431	Group Theory-I	Major Course	3(3,0)
17	MATH-432	Research Methodology	Major Course	3(3,0)
<b>Total Cr. Hrs</b>				<b>15</b>
<b>Semester 4</b>				
18	QR-441	Introduction to Statistics	General Education (Qualitative Reasoning)	3(3,0)
19	ICT-442	Application of Communication and Information Technologies	General Education (ICT)	3(3,0)
20	MATH-441	Calculus-III	Major Course	3(3,0)
21	MATH-442	Linear Algebra-I	Major Course	3(2,1)
22	MATH-443	Differential Equation-I	Major Course	3(3,0)
<b>Total Cr. Hrs</b>				<b>15</b>

## ANNEXURE-II

### Scheme of Studies for BS Mathematics (4-year) Program

S. No.	Course Code	Course Title	Course Nature	Cr. Hrs.
<b>1st Year</b>				
<b>Semester 1</b>				
1	NS-311	Physics	General Education (Natural Science)	3(3,0)
2	FE-312	Functional English	General Education (Functional English)	3(3,0)
3	QR-313	Introduction to Mathematics	General Education (Qualitative Reasoning)	3(3,0)
4	MATH-311	Calculus-I	Major	3(3,0)
5	MATH-312	Elements of Set Theory and Mathematical Logic	Major	3(3,0)
<b>Total Cr. Hrs</b>				<b>15</b>
<b>Semester 2</b>				
6	ICP-321	Ideology and Constitution of Pakistan	General Education	2(2,0)
7	AH-322	Introduction to Pashto Literature	General Education (Arts & Humanities)	2(2,0)
8	ISL-323	Islamic Studies	General Education (Islamic Studies)	2(2,0)
9	MATH-321	Calculus-II	Major Course	3(3,0)
10	MATH-322	Fundamental of Mathematics	Major Course	3(3,0)
11	MATH-323	Mechanics	Major Course	3(3,0)
<b>Total Cr. Hrs</b>				<b>15</b>
<b>2nd Year</b>				
<b>Semester 3</b>				
12	SS-431	Introduction to Psychology	General Education (Social Science)	2(2,0)
13	EN-432	Entrepreneurship	General Education	2(2,0)
14	EW-433	Expository Writing	General Education (Expository Writing)	3(3,0)
15	CCE-434	Civic and Community Engagement	General Education	2(2,0)
16	MATH-431	Group Theory-I	Major Course	3(3,0)
17	MATH-432	Research Methodology	Major Course	3(3,0)
<b>Total Cr. Hrs</b>				<b>15</b>
<b>Semester 4</b>				
18	QR-441	Introduction to Statistics	General Education (Qualitative Reasoning)	3(3,0)
19	ICT-442	Application of Communication and Information Technologies	General Education (ICT)	3(3,0)
20	MATH-441	Calculus-III	Major Course	3(3,0)
21	MATH-442	Linear Algebra-I	Major Course	3(3,0)
22	MATH-443	Differential Equation-I	Major Course	3(3,0)
<b>Total Cr. Hrs</b>				<b>15</b>

Semester 5				
23	MATH-551	Group Theory-II	Major	3(3,0)
24	MATH-552	Linear Algebra-II	Major	3(3,0)
25	MATH-553	Ordinary Differential Equations-II	Major	3(3,0)
26	MATH-5554	Basic Topology	Major	3(3,0)
27	MATH-515	Vector Analysis	Major	3(3,0)
28	CS-		Minor	3(3,0)
<b>Total Cr. Hrs</b>				<b>18</b>
Semester 6				
29	MATH-521	Number Theory	Major	3(3,0)
30	MATH-522	Real Analysis-I	Major	3(3,0)
31	MATH-523	General Topology	Major	3(3,0)
32	MATH-524	Complex Analysis	Major	3(3,0)
33	MATH-555	Numerical Analysis-I	Major	3(3,0)
34	CS-		Minor	3(3,0)
<b>Total Cr. Hrs</b>				<b>18</b>
4th Year				
Semester 7				
35	MATH-661	Real Analysis-II	Major	3(3,0)
36	MATH-662	Classical Mechanics	Major	3(3,0)
37	MATH-663	Numerical Analysis-II	Major	3(3,0)
38	MATH-664	Probability Theory	Major	3(3,0)
39	MATH-665	6-8 Weeks Internship or PLL	Major	3(3,0)
40	CS		Minor	3(3,0)
<b>Total Cr. Hrs</b>				<b>18</b>
Semester 8				
41	MATH-671	Functional Analysis	Major	3(3,0)
42	MATH-672	Partial Differential Equations	Major	3(3,0)
43	MATH-673	Mathematical Methods	Major	3(3,0)
44	MATH-674	Special Function	Major	3(3,0)
45	CS		Minor	3(3,0)
46	MATH-675	Capstone Project		3(3,0)
<b>Total Cr. Hrs</b>				<b>18</b>
<b>Grand Total (Cr. Hrs.)</b>				<b>136</b>

**List of Minor Courses:**

- (1). Introduction to Computer Science
- (2). Object Oriented Programming
- (3). Data Structure and Algorithm
- (4). Software Packages
- (5). Computer Programming, Design and Analysis of Algorithm
- (6). Computing Tools for Mathematicians.