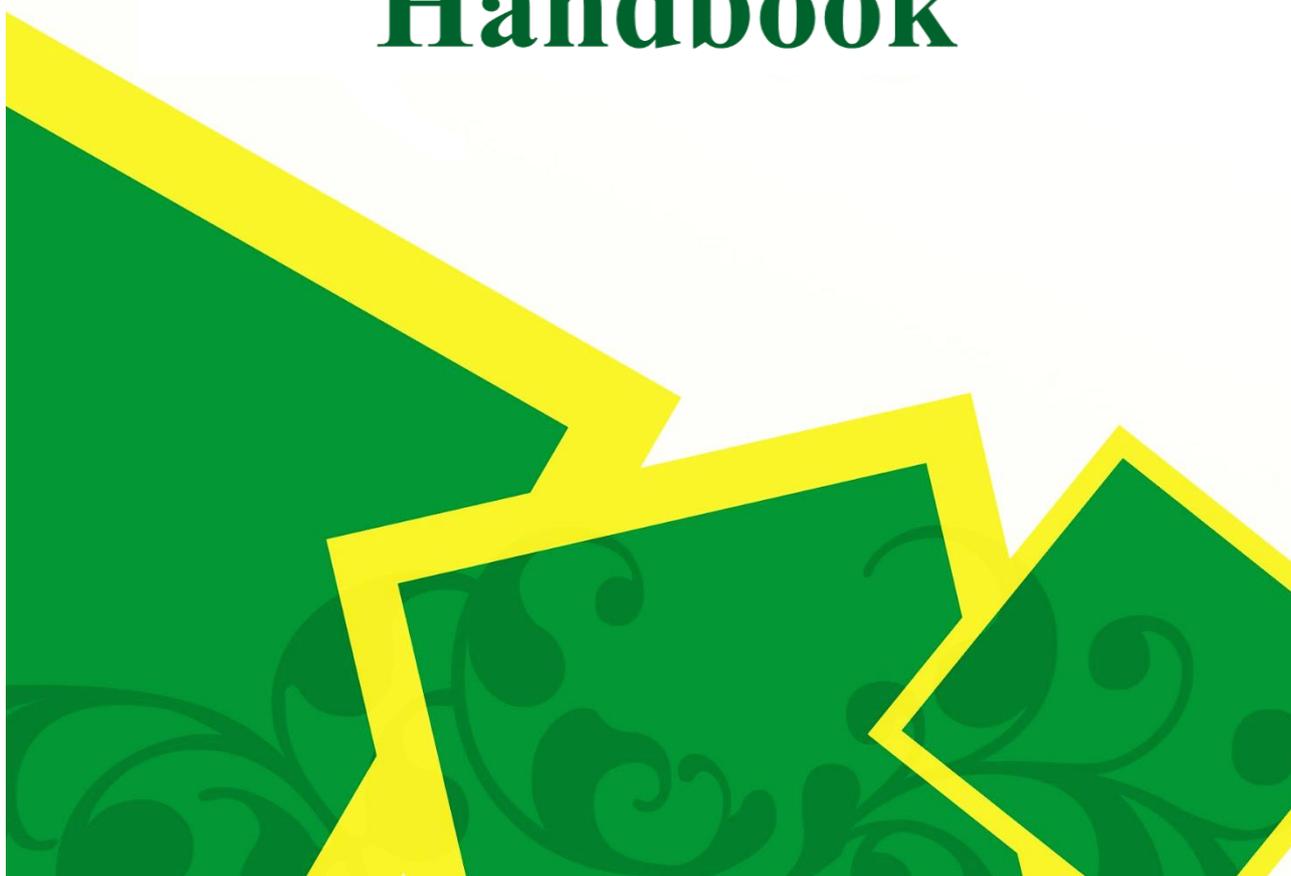




# Mathematics Department Handbook



## **Faculty of Science**

### **Background**

#### **History:**

Faculty of Science, established under the decision of the Board of Higher Education No. 15/37/1426 H. And the approval of the Custodian of the Two Holy Prime Minister and Chairman of the Board of Higher Education may God preserve him guidance No. 9683 / m. E on 5/8/1426 and was a branch of the King Abdul Aziz University in Tabuk including the following departments which offers the Bachelor's degree; Mathematics, Physics, Chemistry and Biology.

### **Vision, Mission, and Objectives**

#### Vision

The Faculty of Science looks forward to be in the ranks of faculties internationally recognized, and a bridge of excellence in the education of students, and innovative scientific research, and community participation that contributes to economic growth and sustainable development, and improve the quality of life locally, regionally, and internationally.

#### Mission

To prepare distinct graduates in basic sciences and technology who have professional ethics and high level of scientific competence, and who will be able to compete and perform the duties assigned to them locally, regionally and internationally to benefit the region and solve the society's problems.

#### Objectives

1. To improve students ability and capability in the various faculty programs and work to develop new programs for graduate studies in all departments.
2. To enhance faculty staff efficiency and attract more expertise and dispatch distinct students to obtain M.Sc. degree and doctorate.
3. To increase the effectiveness of the means of improvement and qualitative development of the faculty; by holding specialized scientific seminars and scientific conferences, and feedback from students about faculty members.
4. To assess and design modern curricula for the Faculty, and to study the creation of new programs in the faculty in line with development requirements and the needs of the labor market.

5. To cooperate and coordinate with Faculties of Science at other national and international institutions, and stand on the experiences of similar faculties inside and outside the Kingdom in the areas of faculty programs in order to obtain the academic accreditation.

6. To encourage faculty research activities for community uplift, and develop the system of scientific research, by establishing state of the art research laboratories, and the issuance of a special scientific journal for the faculty.

### **Academic Departments**

- 1- Department of Biology
- 2- Department of Chemistry.
- 3- Department of Physics
- 4- Department of Mathematics
- 5- Department of Biochemistry
- 6- Department of statistics

### **Degrees Offered**

- 1- Bachelor of Science in statistics
- 2- Bachelor of Science in Biology
- 3- Bachelor of Science in Chemistry.
- 4- Bachelor of Science in Physics
- 5- Bachelor of Science in Mathematics
- 6- Bachelor of Science in Biochemistry

## **Department of Mathematics:**

### **History:**

The department of mathematics is established at the same time when the faculty of science is established in the academic year 1427/1428 h. The department includes in addition to pure mathematics and statistics section which has become later an independent section in 1430/1431 h

Vision, Mission and Objectives:

### **Vision**

To graduate qualified cadres who serve the needs of labor market. To qualify graduates with knowledge and research skills in the field of mathematical sciences that serves the pure and applied sciences

### **Mission**

The mission of the department is to prepare knowledgeable, competent, productive and professionally contributing mathematicians who are ethic and committed to excellence in their future career; who work to advance and serve their community; assisting those from other disciplines in mastering mathematical problem solving skills

### **Objectives**

1-To develop students skills in reasoning, problem solving, critical thinking and analysis, oral and written communication, and use of appropriate technology so as to provide scientific and technical services in various fields of science of different governmental and national sectors.

2-To prepare students for carriers in research, teaching, and other sectors, in order to meet the needs of the region and the kingdom of the scientific research and applied studies.

3-To develop within students an awareness of, and abilities in, applications of mathematics in other disciplines and real-life situations in order to contribute to community service through different means.

Degrees Offered by the Mathematics Department:

Bachelor of Science in Mathematics and Master of Science in Mathematics.

**Brief note on the study plan:**

The courses are divided through eight semesters (including two for the preparatory year). The courses are classified into two categories - compulsory, and restricted-elective (from the department courses).

**Requirements of Degree**

The department of Chemistry at the University of Tabuk awards the Bachelor of Science (B.Sc.) degree according to the credit hours system (total 132 Credit Hours). In order to award the B.Sc., the GPA of the student should not be less than 2 (fair).

**Study Plan****Study Plan General Components**

Prerequisites		Credits	Courses	Weights %
University Courses	Compulsory	12	6	10-20%
College Courses	Compulsory	47	14	10-20%
Department Courses	Compulsory	58	19	50%
	Electives	9	3	6-8%
Free courses	Compulsory			
<b>Total</b>		<b>132</b>		

**Note:**

- **University Courses (10-20%)**
- **Faculty Courses (10-20%)**
- **Department Courses (60-80%)**
  - o **Compulsory (50%)**
  - o **Electives (6-8%)**
  - o **Free Courses -if any- (2-4%)**

## University Prerequisites

	Courses Title	Course Code	Credits		%	Prerequisites
			Credit	Contact		
1	Communication Skills	COMM 001	2	2		
2	Computer Skills	CSC 001	3	4		
3	Learning, Thinking, & Research Skills	LTS 001	3	4		
4	Language Skills	ARAB 101	2	2		
5	Islamic Culture 1	ISLS 101	2	2		
6	Islamic Culture 2	ISLS 201	2	2		ISLS 101
7	Islamic Culture 3	ISLS 301	2	2		ISLS 201
8	Islamic Culture 4	ISLS 401	2	2		ISLS 301
9	Writing Skills	ARAB 201	2	1		ARAB 101
<b>Total</b>			<b>20</b>	<b>22</b>		

### College Compulsory Prerequisites

	Courses Title	Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	Practical	Training			
1	Mathematics 1	MATH 100	3			3		
2	General Physics	PHYS 101	3			3		
3	English 1	ELS 001	15			5		
4	English 2	ELS 002	15			5		ELS 001
5	General Biology	BIO 101	3			3		
6	General Chemistry	CHEM 101	3			3		
7	Mathematics 2	MATH 101	3			3		MATH 100
<b>Total</b>			<b>45</b>			<b>25</b>		

## Department Elective Prerequisites

Courses Title		Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	Practical	Training			
1	Real Analysis 2	MATH 312	3			3		MATH 311
2	Partial Differential Equations & Special Functions	MATH 307	3			3		MATH 305
3	Financial Mathematics	MATH 322	3			3		MATH 200
4	Numerical analysis and mathematical applications	MATH 434	3			3		MATH 334
5	Number theory	MATH 346	3			3		MATH 251 MATH 311
6	Linear algebra 2	MATH 344	3			3		MATH 241
7	Special functions	MATH 427	3			3		MATH 305, MATH 311
8	Complex analysis 2	MATH 414	3			3		MATH 413
9	Measure theory	MATH 416	3			3		MATH 311
10	Ring theory and modules	MATH 445	3			3		MATH 343
11	Euclidian and non-Euclidian geometry	MATH 465	3			3		MATH 261
12	Introduction to approximation theory	MATH 436	3			3		MATH 331, MATH 311

### Department Core Prerequisites

	Courses Title	Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	Practical	Training			
1	<b>Fundamentals of integral Calculus</b>	MATH 200	4	1		4		MATH 101
2	<b>Basics of Mathematics</b>	MATH 251	3	1		3		MATH 101
3	<b>Analytical Geometry</b>	MATH 261	3			3		MATH 101
4	<b>Advanced Calculus</b>	MATH 203	4	1		4		MATH 200
5	<b>Differential Equations</b>	MATH 204	3	2		3		MATH 200
6	<b>Linear algebra</b>	MATH 241	3			3		MATH 251
7	<b>General Statistics</b>	STAT 201	4			4		MATH 200
8	<b>Differential Equations 2</b>	MATH 305	3			3		MATH 204
9	<b>Real Analysis 1</b>	MATH 311	3			3		MATH 251, MATH 200
10	<b>Abstract Algebra 1</b>	MATH 342	3			3		MATH 251
11	<b>Probability Theory</b>	STAT 311	3			3		STAT 201
12	<b>Partial Differential Equations</b>	MATH 406	3			3		MATH 305
13	<b>Abstract Algebra 2</b>	MATH 343	3			3		MATH 342
14	<b>Introduction To Numerical Analysis</b>	MATH 334	3			3		MATH 203, STAT 201
15	<b>Introduction To Operations Research</b>	MATH 340	2			2		MATH 203
16	<b>Mathematics and Packages Program</b>	MATH 333	3			3		STAT 201, MATH 200
17	<b>Integral Equations</b>	MATH 408	3			3		MATH 305, MATH 311
18	<b>Complex Analysis 1</b>	MATH 413	3			3		MATH 311
19	<b>General Topology</b>	MATH 464	3			3		MATH 251, MATH 311
20	<b>History of mathematics among the Arabs and Muslims</b>	MATH 481	3			3		MATH 200
21	<b>Discrete Mathematics</b>	MATH 462	3			3		MATH 251
22	<b>Differential Geometry</b>	MATH 463	3			3		MATH 305, MATH 204
23	<b>Functional Analysis</b>	MATH 415	3			3		MATH 311
24	<b>Research Project</b>	MATH 491	3			3		
<b>Total</b>								

## Study Plan Courses & Levels

### 1<sup>st</sup> Level

### Preparatory Year

	Courses Title	Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	practical	Training			
1	Mathematics (1)	MATH 100	3			3		
2	English (1)	ELS 001	15			5		
3	General Chemistry	CHEM 101	3			3		
4	General Biology	BIO 101	3			3		
5	Learning, Thinking and Research Skills	LTS 001	4			3		
<b>Total</b>						<b>17</b>		

### 2<sup>nd</sup> Level

### Preparatory Year

	Courses Title	Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	practical	Training			
1	General physics	PHYS 101	3			3		
2	Mathematics (2)	MATH 101	3			3		MATH 100
3	English (2)	ELS 002	15			5		ELS 001
4	Computer skills	CSC 001	4			3		
5	Communications skills	COMM 001	2			2		
<b>Total</b>						<b>16</b>		

### 3<sup>rd</sup> Level

### Second Year

	Courses Title	Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	practical	Training			
1	Fundamentals of integral Calculus	MATH 200	4	1		4		MATH 101
2	Basics of Mathematics	MATH 251	3	1		3		MATH 101
3	Analytical Geometry	MATH 261	3			3		MATH 101
4	Programming Language	CS 112	3			3		CS 100
5	Language Skills	ARB 101	2			2		
6	Islamic Culture 1	ISLS 101	2			2		
<b>Total</b>						<b>17</b>		

### 4<sup>th</sup> Level

### Second Year

	Courses Title	Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	practical	Training			
1	Advanced Calculus	MATH 203	4	1		4		MATH 200
2	Differential Equations	MATH 204	3	2		3		MATH 200
3	Linear algebra	MATH 241	3			3		MATH 251
4	General Statistics	STAT 201	4			4		MATH 200
5	Writing Skills	ARB 201	2			2		ARB 101
6	Islamic Culture 2	ISLS 201	2			2		ISLS 101
<b>Total</b>						<b>18</b>		

5<sup>th</sup> Level

## Third Year

Courses Title		Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	practical	Training			
1	Differential Equations 2	MATH 305	3			3		MATH 204
2	Real Analysis 1	MATH 311	3			3		MATH 251, MATH 200
3	Abstract Algebra 1	MATH 342	3			3		MATH 251
4	Probability Theory	STAT 311	3			3		STAT 201
5	Islamic Culture 3	ISLS 301	2			2		ISLS 201
Total						14		

6<sup>th</sup> Level

## Third Year

Courses Title		Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	practical	Training			
1	Partial Differential Equations	MATH 406	3			3		MATH 305
2	Abstract Algebra 2	MATH 343	3			3		MATH 342
3	Introduction To Numerical Analysis	MATH 334	3			3		MATH 203, STAT 201
4	Introduction To Operations Research	MATH 340	2			2		MATH 203
5	Optional Mathematics	MATH xxx	3			3		
6	Islamic Culture 4	ISLS 401	2			2		ISLS 301
Total						14		

7<sup>th</sup> Level

## Fourth Year

	Courses Title	Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	practical	Training			
1	Mathematics and Packages Program	MATH 333	3			3		STAT 201, MATH 200
2	Integral Equations	MATH 408	3			3		MATH 305, MATH 311
3	Complex Analysis 1	MATH 413	3			3		MATH 311
4	General Topology	MATH 464	3			3		MATH 251, MATH 311
5	History of mathematics among the Arabs and Muslims	MATH 481	3			3		MATH 200
6	Optional Mathematics	MATH xxx	3			3		
<b>Total</b>						<b>18</b>		

8<sup>th</sup> Level

## Fourth Year

	Courses Title	Course Code	Contact Hours			Credit	%	Prerequisites
			Theoretical	practical	Training			
1	Discrete Mathematics	MATH 462	3			3		MATH 251
2	Differential Geometry	MATH 463	3			3		MATH 305, MATH 204
3	Functional Analysis	MATH 415	3			3		MATH 311
4	Research Project	MATH 491	3			3		
5	Optional Mathematics	MATH xxx	3			3		
<b>Total</b>						<b>15</b>		

## **Brief of Regulation for Academic Study and Examination of undergraduate Programmes**

### Article one: Definitions

#### **1.1 Academic year:**

The main two semesters and summer semester if any

#### **1.2 Academic semester:**

Each academic course is of duration not less than fifteen weeks, including the time of registration and final examination

#### **1.3 Academic study level**

It is indicative of Academic study stage. The number of Academic study levels required for graduation is eight or more levels in accordance with the Academic Plans approved.

#### **1.4 Course**

An academic subject follows a specific academic level within the academic plan approved in each specialization (program). Each course has a code, a number, a name and detailed description of its contents different from other courses content. Special file for each course should be maintained by the department, that for the purpose of monitoring, evaluation and development. Some courses may require one or more pre-requisites, which may studied simultaneously.

#### **1.5 A unit of study:**

It is a weekly theoretical lecture given with a duration fifty-minutes.

**Academic warning: it is** a direct notice to students whose cumulative GPA is below minimum pass (2 of 5) as described in this directory.

#### **1.6 Semester assignments degree**

It is a grade given the student to clarify his performance generated from test, research and activities that related to study courses during one semester.

#### **1.7 The final exam:**

It is course exam, which held once at the end of each semester.

#### **1.8 The final exam degree:**

It is a degree given to the student for each courses at final exam.

#### **1.9 The final degree:**

It is the sum of Semester assignments degree and the final exam degree. It calculated of 100%

### **1.10 Grade:**

It is description of the percentage or the letter code of the final degree assigned to student's final degree in any courses.

### **1.11 Incomplete Grade(IC):**

It a temporary grade assigned to any course that the student does not complete its requirement, and usually have the code (IC).

### **1.12 In-Progress Grade :**

It a temporary grade assigned to any course, which needs more than one semester to completed its requirement, and usually have the code (IP).

### **1.13 Semester Grade Point Average (SGPA) :**

It is the sum of all course point acquired by the students at the end of a semester divide by the sum of planned credited hours assigned to all courses. The pints equal the courses credit hour times the grade weight (loot at how to calculate the semester (GPA) at the end of this document)

### **1.14 Cumulative Grade Point Average (CGPA).**

It is the sum of all semester courses point acquired by the students at the end of the year divided by the sum of planned credited hours assigned to all courses.(look at how to calculate the cumulative (GPA) for the year at end of this document).

### **Academic Levels and studying system.**

- The duration of study at faculty of science is eight levels and each level is equivalent to one semester.
- The Students shift from one level to other level, if they pass all prescribed courses of that level.
- The students minimum study workload is (12) units of study or the remaining units required of completion for graduation even if it is less than the workload. The maximum study workload is (24) units of study if the students expected to complete the graduation.
- The students' cumulative grade point average (GPA) determine the maximum students study workload for units of study.
- Students can be on automatically registered students before the start of the semester. Students enabled to delete and add courses according to the guidelines set by deanship of Admission and Registration.

### **1.15 Attendance and withdrawal**

Regular students should compulsory attend all course lectures and practical studies. The student will be prohibit for entering the final exam for any course during the first semester or the second semester, if his attendance is less than (75%) and he will be assigned the grade (F) (Failure) or denial (DN).

The student has the right to withdraw from not to continue studying. In either the first or the second semester before at least three weeks of the start the final exams for each first or second semester, if and only if he can show an acceptable apology to the Faculty of Science Dean. The withdrawing from continuous study must not exceed two consecutive semesters or three non-consecutive semesters. The student has a right to withdraw from one or more courses according to the following:

- The Faculty of science Approval.
- Must apply to withdraw from any course before fixed date for withdrawal time (apologize)
- The students in his final result will be assigned (w) for the course that he withdraws

#### **Postponement and drop out of studying:**

- Students may apply for study postponement before the end of the first starting week of studying courses for an excuse acceptable to the dean of the Faculty of science.
- If regular student dropout of his studies for four weeks from the beginning of the semester without requesting postponement, the Faculty Has a right to fold his registration.
- The Student will not considered as drop out from his studies, if and only if, he is studying some courses as a visit or at another university.

#### **Student's Re-enrollment**

Student with pleated enrollment (Folding registration), Can apply for the Faculty to re-enroll him with the same identity number and registration number according to the following:

- Students may apply for re-enrollment (Re-entry) during four semesters (or two years) starting from the date of pleated enrollment (collapse).
- The Faculty of science Board approval and agreement on the student re-enrollment.
- If the students pleated enrolment past more than four semester, he can apply for faculty of science to admit him as new students, without reference to the previous registration and to follow all the requirements stared at the time of admission.

- The students will not allowed re-enrolling more than once.
- The students will not allowed re-enrolling if he dismissed from the faculty of science.

### **Graduation:**

Students will graduate from the faculty of science after having successfully completed the prescribed courses (study plan) with not less than cumulative GPA (2 OF 5)

### **Dismissing From the university**

Firstly: Students will not be dismissed of university, if one of the following cases occurred:

1. If the students receives, at most three consecutive warnings due to GPA less than the minimum pass (2:00).
2. If the students did not finish graduations' requirements within a maximum of half time Scheduled for graduation, in addition to duration of the program (4 years).

## Graduation and Degrees of honor (Grading System)

Grade Limit	Grade	Grade Code	Grade Weight
95 -100	Exceptional	A+	5
90 to less than 95	Excellent	A	4.75
85 to less than 90	Superior	B+	4.5
80 to less than 85	Very Good	B	4
75 to less than 80	Above Average	C	3.5
70 to less than 75	Good	C+	3.
65 to less than 70	High Pass	D+	2.5
60 to less than 65	Pass	D	2.0
less than 60	Fail	F	1
-----	In - Progress	IP	----

1- Grade and degrees of honor obtained by the student in each course is calculated as follows:

2- The cumulative grade point average (GPA) awarded to graduated student is as follows.

- Excellent: if the cumulative GPA of at least 4.5.
- Very Good: If the cumulative GPA of 3.75 to less than 4.5.
- Good: If the cumulative GPA of 2.75 to less than 3.75.
- Pass: If the cumulative GPA of 2.00 to less than 2.75

3- A student who graduated with accumulative grade point average (GPA) of (4.5) to (5) will be awarded First Class Honors Degree, and the one who graduated with accumulative grade point average (GPA) of (4.25) to less (4.75) will be awarded Second Class Honors Degree.

The conditions required for awarding First Class Honors Degree or Second Class Honors Degree is as follows:

- The student must not fail in any course taught to him at his university of graduation or any other university.

- The student must have completed graduation requirements at a maximum average duration (between minimum and maximum stay in Faculty )
- The student must have studied at University of Tabuk at least 60% of graduation requirements.

**How to calculate the Semester (GPA) and average (GPA) for the year Example:**

**First semester**

Course	Credit Hours	%	Grade	Grade Weight	points
Course 1	2	85	A+	4.5	9.00
Course 2	3	70	C	3	9.00
Course 3	3	92	A	4.75	14.25
Course 4	4	80	B	4	16
	12				48.25

$$\text{GPA for Semester} = \frac{48.25}{12} = 4.02$$

Course	Credit Hours	%	Grade	Grade Weight	points
Course 1	2	96	A+	5	10.00
Course 2	3	83	B	4	12.00
Course 3	3	71	C	3	9.00
Course 4	4	81	B	4	12.00
	12				43

$$\text{GPA for Semester} = \frac{43}{12} = 3.58$$

$$\text{Average GPA for the year} = \frac{48.25 + 43}{12 + 12} = 3.80$$

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