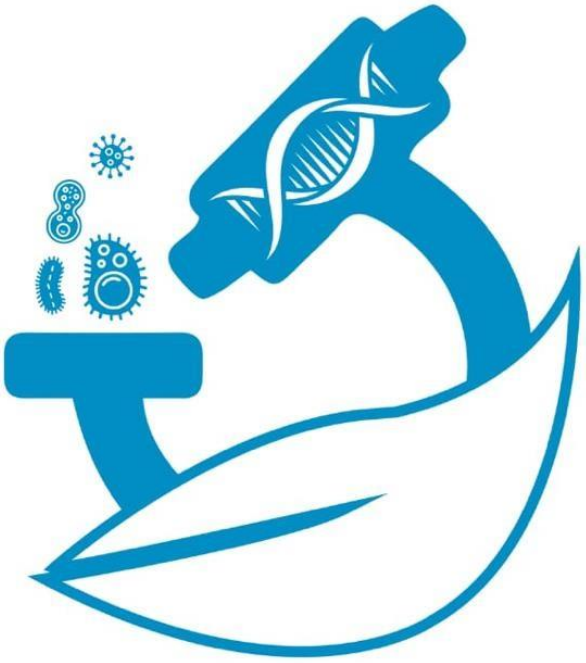

Study Plan: Botany Program

Total Units of Study for Bachelor of Botany Program

	Number of Courses	Total Credits	Percentage of 136 hours
Common First-Year Requirements	10	32	22.8%
Requirements University	4	8	5.9%
Requirements College, Department, and Program Requirements	variable	96	71.3%
		136	100%

Number of courses and percentage of units of study for the botany program

	Number of Courses	Total Credits	Theoretical	Percentage of 96 hours	Practical	Percentage of 96 hours
Compulsory within the Specialization	25	62	30	31.25	25	26%
Compulsory from outside the specialization	7	19	12	12.5	7	7.3%
Electives from outside the specialization	3-4	9	6	6.25	3-4	3.1%
Electives within the Specialization	3	6	4	4.2	2	2.1%
Total	38-39	96	52	54.17	37-38	38.54%

University requirements			
S	Course Code		Study units
1	4 Courses	University requirement	8
Total		**4 Courses**	8
Compulsory from within the specialization			
S	**Code**	**Course Name**	**Study units**
1	BOT102	Botany	3
2	BOT211	Plant Anatomy	3
3	BOT213	Microtechnic	2
4	BOT222	Principals of Flowering Plants Taxonomy	3
5	BOT241	Plant Ecological Factors	3
6	BOT251	Cell Biology & Cytogenetics	3
7	BOT254	Genetics	3
8	BOT272	Plant Physiology	3
9	BOT341	Ecosystem	1
10	BOT342	Plant community science	2
11	BOT345	Flora of Saudi Arabia	2
12	BOT346	Pollution and Environmental protection	2
13	BOT349	Ecophysiology	2
14	BOT359	Population Genetics	2
15	BOT373	Plant Growth & its Regulators	2
16	BOT384	Phycology	3
17	BOT398	Research Project (1)	2
18	BOT441	Economic Botany	2
19	BOT443	Ecological Methods	2
20	BOT445	Desert Ecology & its Resources	2
21	BOT472	Plant Tissue Culture	2
22	BOT473	Plant Chemistry	2
23	BOT492	Ecological Field Training	5
24	BOT495	Plant Molecular Biology	3
25	BOT499	Research Project (1)	3

Compulsory from outside the specialization			
S	**Code**	**Course Name**	**Study units**
1	CHEM101	General Chemistry (1)	4
2	ZOOL103	Principles of General Zoology	4
3	MBI140	General Microbiology	3
4	STAT145	BIOSTATISTICS	2
5	CHEM253	الكيمياء مبادئ التحليلية	2
6	GIO303	Principles of Remote Sensing	3
7	MBI454	Microbial Interaction	2
Total		**7 courses**	**20**

Elective from within the specialization			
S	**Code**	**course name**	**Study units**
1	3 Courses		6
المجموع		**مقررات13**	6

Elective from outside the specialization			
م	**Code**	**Courses from outside or within the department**	**Study units**
1	3-4 courses		9
Total		**3-4 courses**	**9**

	Botany Program	
	No. of courses	**Study units**
Common first year	10	32
University Requirements	4	8
Obligatory from within the specialization	25	62
Obligatory from outside the specialization	7	20
Elective from within the specialization	3	6
Elective from outside the specialization	4-Mar	9
Total	**52-53**	111
Service courses for college departments	1	3

Number of courses and teaching units

First+C3:M32 (first common year)ا				
Code	course name	requisite	Co-requisites	credit hours
ENGS 100	English Language	-		6
ARAB 100	Writing Skills (O)	-		2
CT 101	IT Skills	-		3
ENT 101	Entrepreneurship	-		1
MATH 101	Differential Calculus	-		3
Total credit hours				15

Second (first common year)				
Code	course name	requisite	Co-requisites	credit hours
STAT 101	Introduction to Probability and Statistics	-		3
EPH 101	Fitness and Health Education	-		1
CHEM101	General Chemistry (1)	-		4
CI 101	University skills	-		3
ENGS 110	English	ENGS 100		6
Total credit hours				17

3ed level				
Code	course name	requisite	Co-requisites	credit hours (Theo.+ Tut.+ Lab.)*
BCH 101	General Biochemistry	-		(2+0+3) 4
BOT 102	Botany	-		(2+0+ 2) 3
ZOOL 103	Principles of general Zoology	-		(2+0+ 2) 3
MBI 140	General Microbiology	-		(2+0+ 2) 3
STAT145	Biostatistics			(0+0+ 2) 2
Elective course required by the university		-		2
Total credit hours				17

4th level				
Code	course name	requisite	Co-requisites	credit hours (Theo.+ Tut.+ Lab.)*
BOT 213	Plant microtechniques.	BOT 102		2 (2+0+ 1)
BOT 222	Principals of Flowering Plants Taxonomy	BOT 103		3 (2+0+ 2)
BOT 241	Plant Ecological Factors	BOT 104		3 (2+0+ 2)
BOT 251	Cell Biology & Cytogenetics	BOT 105		3 (2+0+ 2)
BOT 272	Plant Physiology	BOT 106		3 (2+0+ 2)
Elective course required by the university				2
Total credit hours				16

8th level				
Code	course name	requisite	Co-requisites	credit hours (Theo.+ Tut.+ Lab.)*
GEO303	Principles of Remote Sensing	-		3 (0+2+ 2)
MBI345	Microbial Interaction	MBI 140		2 (2+0+ 1)
BOT384	Phycology			3 (2+0+ 2)
BOT443	Ecological Methods			2 (4+0+ 0)
BOT499	Research Project (2)			3 (3+0+ 0)
Elective course outside the specialization-		MBI 140		3
Total credit hours				16

9th level				
Code	course name	requisite	Co-requisites	credit hours (Theo.+ Tut.+ Lab.)*
BOT441	Economic Botany			2 (0+0+ 2)
BOT445	Desert Ecology & its Resources	BOT354		2 (0+0+ 2)
BOT472	Plant Tissue Culture	BOT251		2 (2+0+ 1) 2
BOT473	Plant Chemistry	BOT272		2 (2+0+ 1) 2
BOT495	Plant Molecular Biology			3 (2+0+ 2) 3
Elective course outside the specialization		MBI140		3
Elective course inside the specialization		BOT102		2
Total credit hours				16

7th level			
Code	Course Name	requisite	+.credit hours (Theo.+ Tut *(.Lab
BOT 492	Ecological Field Training		5 (10+0+0)
Total credit hours			5

5th level				
Code	course name	requisite	Co-requisites	credit hours (Theo.+ Tut.+ Lab.)*
BOT211	Plant Anatomy	BOT 102		3 (2+0+ 2)
CHEM 253	Analytical Chemistry for Non-Major	-		2 (2+0+ 1)
BOT254	Genetics	BOT 251		3 (2+0+ 2)
BOT341	Ecosystem	BOT 241		1(0+0+ 1)
BOT345	Flora of Saudi Arabia	BOT 241		2 (2+0+ 1)
BOT349	Ecophysiology	BOT 241, BOT 272		2 (2+0+ 1)
Elective course required by the universit				2
Elective course outside the specialization		MBI 140		3
Total credit hours				18

6th level				
Code	course name	requisite	Co-requisites	credit hours (Theo.+ Tut.+ Lab.)
BOT342	Phytosociology			2 (2+0+ 1)
BOT348	Pollution & Enviromental Protection			2 (2+0+ 1)
BOT359	Population Genetics			2 (2+0+ 1)
BOT272	Plant Growth & its Regulators			2 (2+0+ 1)
BOT398	Research Project (1)			2 (4+0+0)
Elective course required by the university				2
Elective course inside the specialization				2
Elective course inside the specialization				2
Total credit hours				16

Theo. + Tut. + Lab.) = theoretical + tutorial + practical. * Actual hours
Note: A student can choose courses outside the major (ZOOL) 3 courses with units = (2+0+1), or 3 courses + 1 course from (MBI) with units = 3 (2+0+2), and thus he/she completes 9 hours.

University +D2:H17requirements (student chooses 8 credit hours)				
Code	**Course Name**	**credit hours (Theo.+ Tut.+ Lab.)**	**requisite**	**Co-requisites**
IC 100	**Studies in the Prophet Biography**	**(0+0+2)2**	**-**	**-**
QURN 100	**Quran Kareem**	**(0+0+2)2**	**-**	**-**
IC 101	**Principles of Islamic Culture**	**(0+0+2)2**	**-**	**-**
IC 102	**Family in Islam**	**(0+0+2)2**	**-**	**-**
IC 103	**Economic System in Islam**	**(0+0+2)2**	**-**	**-**
IC 104	**Islamic Political System**	**(0+0+2)2**	**-**	**-**
IC 105	**Human Rights**	**(0+0+2)2**	**-**	**-**
IC 106	**Medical Jurisprudence**	**(0+0+2)2**	**-**	**-**
IC 107	**Professional Ethics**	**(0+0+2)2**	**-**	**-**
IC 108	**Current Issues**	**(0+0+2)2**	**-**	**-**
IC 109	**Women and their developmental role**	**(0+0+2)2**	**-**	**-**

Elective requirements from outside the specialization (the student chooses 9 credit hours)				
Code	**Course Name**	**credit hours (Theo.+ Tut.+ Lab.)**	**Requisit**	**Depart ment**
MBI 240	**Laboratory Skill**	**(4+0+0) 2**	**MBI 140**	**Botany and Microbiology**
MBI 250	**Gereral Virology**	**(2+0+ 2) 3**		
MBI 260	**General Bacteriology**	**(2+0+ 2) 3**		
MBI 270	**Gerneral Mycology**	**(2+0+2) 3**		
MBI 280	**Biology of Microalgae**	**(2+0+1) 2**		
ZOOL305	**Animal Modern Taxonomy**	**(2+0+1) 2**	**ZOOL103**	**Zoology**
ZOOL373	**Terrestrial Ecology**	**(2+0+1) 2**		
ZOOL374	**Aquatic Ecology**	**(2+0+1) 2**		
Total		**19**		

Elective requirements within the specialization (the student chooses 6 hours)				
Code	**Course Name**	**requisite**	**Co-requisites**	**credit hours (Theo.+ Tut.+ Lab.)**
BOT263	**Archegoniate**	BOT 102	-	**(2+0+1) 2**
BOT312	**Plant Morphogenesis**			**(2+0+1) 2**
BOT322	**Experimental Taxonomy**			**(2+0+1) 2**
BOT347	**Plant Geography**			**(0+0+2) 2**
BOT379	**Metabolism &Transport in Plants**			**(2+0+1) 2**
BOT380	**Plant Water & Soil Relations**		-	**(2+0+1) 2**
BOT447	**Arid Regions**		-	**(2+0+1) 2**
BOT449	**Development Natural Resourses & Management**		-	**(0+0+2) 2**
BOT456	**Gene Conservation**		-	**(2+0+1) 2**
BOT457	**Genetic Engineering**		-	**(2+0+1) 2**
BOT458	**Ecological Genetics**		-	**(2+0+1) 2**
BOT476	**Date Palm Biology**		-	**(2+0+1) 2**
BOT487	**Phytoplanktons**		-	**(2+0+1) 2**
Total				**26**

Service courses for Science College specializations and other colleges			
Code	**Course Name**	**credit hours (Theo.+ Tut.+ Lab.)**	**Beneficiary**
BOT 102	Botany	**3 (2+0+2)**	**Science College (Botany and Microbiology Dep. , Chemistry Dep.) Agriculture College**
Total		**3**	

Brief description of the courses of the Botany Program

First: Compulsory courses from within the specialization

102 BOT: Botany

Plant cell introduction, metabolism, anatomy: tissues, stems, leaves, roots, plant water relations and absorption and transport systems, photosynthesis, genetics and life cycle, taxonomy, mosses, ferns, gymnosperms, angiosperms, flowers and fruits, plant environment

211 BOT: Plant Anatomy

Introduction to plant cell and tissue types, primary vegetative body, secondary vegetative body, secretory structures, anatomical structure, and relationship to the environment.

213 BOT: Plant Microtechniquenic

Introduction, devices used in microscopic preparation and their uses, methods of preserving complete samples, methods of preparing samples, types of stabilizers, methods of preparing sectors, types of pigments, methods of identifying the contents of cells and tissues, microscopic drawing.

222 BOT: Principals of Flowering Plants Taxonomy

Classification concept, traditional and modern taxonomy trends, taxonomic traits and their sources, plant nomenclature and its laws, taxonomic units and classification scale, methods of identifying unknown plants, classification systems for flowering plants, experimental classification and its main sources (microstructure, anatomical, cellular, chemical, and environment

241 BOT: Plant Ecological Factors

Definition of ecology and ecology Environmental factors - biological factors: the influence of both animals on plants and plants on each other and the relationships that arise from these influences,

abiotic factors Soil factors: topography Factors in terms of origin, composition, physical and chemical properties Climate factors and the effect of these factors on plants

251 BOT: Cell Biology & Cytogenetics

Overview of genetic material DNA assembly and structure/function relationships. DNA replication, transcription, translation, regulation of gene expression – Gene cloning and chemical analysis of DNA restriction enzyme and sequencing methods – Recombinant DNA technology and genetic engineering concept and applications in microbiology.

272 BOT: General Physiology of Plants

Water relationships in plants, mineral nutrition, plant metabolism and chemistry, growth and excellence, stress physiology, nutrient transport, biosynthesis and respiration

345 BOT: Flora of Saudi Arabia

The concept of flora A historical overview of the development of fluorescent studies in the Kingdom of Saudi Arabia, the topography and climate of the Kingdom of Saudi Arabia, the fluorescent structure and its various systems Plant species in the Kingdom of Saudi Arabia (characteristics, density, plant and geographical distribution in the Kingdom) The relationship of the Saudi flora with the flora of neighboring regions, infinite migratory endemic species, low prevalence and endangered, economic, aromatic, poisonous, pastoral, woody and edible.

346 BOT: Pollution and Environmental Protection

The concept of the ecosystem, the atmosphere and its components, the concept of pollution, the impact of pollution on the ecosystem, the sources and nature of pollutants (air, water, soil), Noise pollution, Radioactive pollution, pesticide pollution, biological means of controlling pollution in general, pictures of degradation of vegetation cover, soil, and means of protection.

349 BOT: Ecophysiology

The concept of regionalization, environmental stresses: concept and definition, the reflection of environmental changes on plants, God-given strategies for plants to adapt to environmental conditions

495 BOT: Plants Molecular Biology

Structural structure of DAN and RAN, self-reproduction of DAN, genetic code, transcription and translation of DAN genetic material and genetic units, balance of gene structure and peptide sequences, functions of homologous structure, and different structures of DAN reorganization of genetic material in bacteria plasmids, episomes, and DAN Modification of gene expression.

359 BOT: Population Genetics

The subject matter of Population Genetics, Genetic Structure of apopulation, Allele and Genotype frequency, The sources of Genetic Variation in natural populations, Measuring Genetic Variation within and among natural populations and its molecular and non-molecular markers, Mating systems, Hardy-Wineberg Equilibrium, Sexual reproduction and Genetic variation, Factors affecting Evolution in Natural plant populations (Natural selection, Mutation, Migration, Genetic Drift, Founder effect, mating system etc. . .)

373 BOT: Plant Growth & its Regulators

Growth, definition, measurement and patterns of growth curves, patterns of growth and excellence and factors affecting them, groups of growth regulators, auxins, gremlins, cytokinin, growth inhibitors, ethylene and the interaction of hormones with each other.

384 Plant: Algaeology

Introduction, algae sections, characteristics to be used in algae division Cellular structure, phenotype, nutrition, asexual and sexual

reproduction, life cycle patterns, biological and economic importance of algae, algae ecology, algae classification

342 BOT: Phytosociology

The concept of the vegetarian community The different environmental schools in the world to study vegetation cover The origin and development of vegetation cover on the ecological site Stages of vegetation formation: changes that occur until it stabilizes Vegetative succession: aquatic and drought Peak Competition between plant species and its influencing factors Classification of vegetation cover Characteristics of the plant community: quantity and quality.

441 BOT: Economic Botany

Plants of economic importance and their products: - (fats, oils, carbohydrates, wood, fibers, dragons, tanners, dyes, alkaloids, vegetable milk, rubber, essential oils, gums, wax, resins, cellulose, paper) - Grains (cereal crops, legumes, sugars, fruit plants, spices) - Medicinal plants (pharmaceutical plants, narcotics, drinks.

445 BOT: Desert Ecology & its Resources

The concept of the desert from the environmental point of view - desert patterns in the world, geomorphology of deserts - soil of deserts - flora of deserts and their fauna, adaptations of desert plants. Climatic characteristics of deserts.

472 BOT: Plant Tissue Culture

Scientific foundations of organs, tissues, cells and embryos culture, integration of protoplasm, thallus organism, production of mono, bilateral and polychrome osomal plants - techniques used in tissue and cell culture - stages of detection and differentiation of cultured tissues - applications and models on tissue and cell culture

473 BOT: Plant Chemistry

Introduction to plant chemistry and its importance in plant sciences - chemical components of plant cells and tissues and their uses - dyes - gums and alkaloids - vegetable milk - proteins - carbohydrates - fats and volatile and aromatic oils - extraction and separation of various chemical compounds in plants.

492 BOT: Environmental Field Exercise

To learn about the plant environments in the Kingdom of Saudi Arabia - Factors affecting vegetation cover (soil study) - Study of plant communities - Study of the impact of human activities on the environment in general and on the plant environment in particular - Conservation and collection of plant samples by herbarium method.

499 BOT: Research Project 2

Using scientific journals, searching for information in various information containers, designing and implementing practical experiments, analyzing results, writing scientific reports