



Re-Accredited 'B++' 2.86 CGPA by NAAC

VEER NARMAD SOUTH GUJARAT UNIVERSITY

University Campus, Udhna-Magdalla Road, SURAT - 395 007, Gujarat, India.

વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી

યુનિવર્સિટી કેમ્પસ, ઉદ્ધના-મગદલ્લા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.

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--: પરિપત્ર :-

વિજ્ઞાન વિદ્યાશાખા હેઠળની સંલગ્ન તમામ કોલેજોનાં આચાર્યશ્રીઓને જણાવવાનું કે, NEP-2020 અંતર્ગત શૈક્ષણિક વર્ષ ૨૦૨૩-૨૪ ના ડિસેમ્બર-૨૦૨૩ થી અમલમાં આવનાર B.Sc.Botany Sem.-2 નો Major, Minor, MDC અને SEC ના અભ્યાસક્રમ સંદર્ભે વનસ્પતિશાસ્ત્ર વિષયની અભ્યાસ સમિતિની તા.૦૨/૧૨/૨૦૨૩ ની સભાના ઠરાવ ક્રમાંક :૦૧ અન્વયે નીચે મુજબ કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાના અધ્યક્ષશ્રીએ વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ વિદ્યાશાખા વતી મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણ એકેડેમિક કાઉન્સિલની તા.૦૬/૧૨/૨૦૨૩ની સભાનાં ઠરાવ ક્રમાંક: ૩૧ થી મંજૂર કરેલ છે. જેનો અમલ કરવા આથી જાણ કરવામાં આવે છે.

વનસ્પતિશાસ્ત્ર વિષયની અભ્યાસ સમિતિની તા.૦૨/૧૨/૨૦૨૩ ની સભાનાં ઠરાવ ક્રમાંક:૦૧

:: આથી ઠરાવવામાં આવે છે કે, NEP-2020 અંતર્ગત ડિસેમ્બર-૨૦૨૩ થી અમલમાં આવનાર B.Sc. Botany Sem.- 2 નો Major, Minor, MDC અને SEC નો અભ્યાસક્રમ સર્વાનુમતે મંજૂર કરી વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

એકેડેમિક કાઉન્સિલની તા.૦૬/૧૨/૨૦૨૩ની સભાનાં ઠરાવ ક્રમાંક: ૩૧

:: આથી ઠરાવવામાં આવે છે કે, NEP-2020 અંતર્ગત શૈક્ષણિક વર્ષ ૨૦૨૩-૨૪ ના ડિસેમ્બર-૨૦૨૩ થી અમલમાં આવનાર B.Sc. Botany Sem.-2 નો Major, Minor, MDC અને SECના અભ્યાસક્રમ સંદર્ભે વનસ્પતિશાસ્ત્ર વિષયની અભ્યાસ સમિતિની તા.૦૨/૧૨/૨૦૨૩ની સભાના ઠરાવ ક્રમાંક :૦૧ અન્વયે કરેલ ભલામણ વિજ્ઞાન વિદ્યાશાખાના અધ્યક્ષશ્રીએ વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ વિદ્યાશાખા વતી મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણ સ્વીકારી મંજૂર કરવામાં આવે છે.

બિડાણ: ઉપર મુજબ

ક્રમાંક : એસ./સાયન્સ/પરિપત્ર/૩૦૫૧૪/૨૦૨૩
તા.૦૭-૧૨-૨૦૨૩


કુલસચિવ

પ્રતિ,

- ૧) વિજ્ઞાન વિદ્યાશાખા હેઠળની સંલગ્ન તમામ કોલેજોનાં આચાર્યશ્રીઓ.
..... આપશ્રીની કોલેજના સંબંધિત શિક્ષકોને જાણ કરી અમલ કરવા સારૂ.
- ૨) અધ્યક્ષશ્રી, વિજ્ઞાન વિદ્યાશાખા.
- ૩) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.
.....તરફ જાણ તેમજ અમલ સારૂ.



VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
Course Coding Pattern for Three/Four Years UG Degree (Honours) Semester-II
FRAMED ACCORDING TO NATIONAL EDUCATION POLICY (NEP) 2020
(Effective from December 2023)
FOR
BOTANY

Course Coding Pattern for Three/Four Years UG Degree (Honours) Semester-II

Semester	Major(MJ)		Minor(ME)		Multi disciplinary (MDC)	AEC	SEC	VAC	Internship	Total Credits
	Theory	Practical	Theory	Practical	T/(T+P)	-----	T/P/(T+P)	-----	-----	-----
II	3+3	1+1	2	2	4/(2+2)	2	2/2/(1+1)	2	-----	22

[AEC: Ability Enhancement Course; SEC: Skill Enhancement Course; VAC: Value Added Course]

Semester II [Major (MJ)]			
Course Code	Course Title	Teaching Schedule Hours /Week	Credits
BO-MJ-201	PLANT DIVERSITY & ANATOMY	3	3
BO-MJ-202	PLANT MORPHOLOGY AND SYSTEMATICS	3	3
BOP-MJ-203	PRACTICAL	4	1+1
TOTAL CREDITS			8

Semester II [Minor (ME)] DOMAIN SPECIFIC/ ELECTIVE			
Course Code	Course Title	Teaching Schedule Hours /Week	Credits
BO-ME-201	ANATOMY & TRACHEOPHYTES	2	2
BOP-ME-202	PRACTICAL	4	2
TOTAL CREDITS			4

Semester II [Multidisciplinary (MDC)]			
Course Code	Course Title	Teaching Schedule Hours /Week	Credits
BO-MDC-201	ECONOMIC BOTANY	2	2
BOP-MDC-202	PRACTICAL	4	2
TOTAL CREDITS			4

Semester II [Skill Enhancement Course (SEC)]			
Course Code	Course Title	Teaching Schedule Hours /Week	Credits
BO-SEC-201	INTRODUCTION TO ETHNOBOTANY & PHARMACOGNOSY	2	2
OR			
BO-SEC-201	BASICS TO HERBAL CRUDE DRUGS	1	1
BOP-SEC-202	PRACTICAL	2	1
TOTAL CREDITS			2



VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B.Sc. SEMESTER - II
FRAMED ACCORDING TONATIONAL EDUCATION POLICY (NEP) 2020
(Effective from December 2023)
BO-MJ-201
BOTANY (MAJOR) PAPER – 201

BO-MJ-201	<u>PLANT DIVERSITY & ANATOMY</u>	(3 credits)
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BO-MJ-201	<u>PLANT DIVERSITY & ANATOMY</u>	45 Hours
UNIT 1	PTERIDOPHYTES	15 Hours
	<ul style="list-style-type: none"> ➤ General Characters of Pteridophytes ➤ Life cycle of Pteridophytes ➤ Classification (Riemers, 1954), occurrence morphology, anatomy and life cycle of the genera: <i>Equisetum</i> ➤ Economic and Ecological importance of Pteridophytes 	
UNIT 2	GYMNOSPERMS	15 Hours
	<ul style="list-style-type: none"> ➤ General Characters of Gymnosperms ➤ Life cycle of Gymnosperms ➤ Classification, occurrence, morphology, anatomy and life cycle of the genera: <i>Pinus</i> ➤ Economic and Ecological importance of Gymnosperms 	
UNIT 3	PLANT ANATOMY-I	15 hours
	<ul style="list-style-type: none"> ➤ Meristematic Tissues : <ul style="list-style-type: none"> ➤ Characteristics of Meristematic tissue ➤ Types of meristematic Tissues: <ol style="list-style-type: none"> a. On the basis of Origin- Promeristem, Primary Meristem, Secondary Meristem. b. On the basis of Position- Apical, Intercalary and Lateral c. On the basis of function- Protoderm and Procambium and Ground. ➤ Function of meristematic tissue ➤ Permanent Tissue (Simple and Complex): Introduction, Types and its function & Significance ➤ Vascular Bundle : Definition and Types ➤ Stele: Definition and Types 	



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SYLLABUS FOR B.Sc. SEMESTER - II
FRAMED ACCORDING TO NATIONAL EDUCATION POLICY (NEP) 2020
(Effective from December 2023)
BO-MJ-202
BOTANY (MAJOR) PAPER - 202

BO-MJ-202:	<u>PLANT MORPHOLOGY AND SYSTEMATICS</u>	(3 credits)
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BO-MJ-202:	<u>PLANT MORPHOLOGY AND SYSTEMATICS</u>	45 Hours
UNIT 1	FRUITS AND SEEDS	15 Hours
	<ul style="list-style-type: none">➤ Fruits: Introduction, classification and types with examples➤ Seeds: Structure and Types (dicot and monocot seed), albuminous and exalbuminous seeds	
UNIT 2	Introductory Plant Systematics	15 Hours
	<ul style="list-style-type: none">➤ Binomial Nomenclature, Types of Classification (Artificial, Natural and Phylogenetic)➤ Bentham and Hooker System of classification (upto series)➤ Herbarium technique, Botanical Garden, Botanical Survey of India (BSI)	
UNIT 3	ANGIOSPERM FAMILIES	15 Hours
	<ul style="list-style-type: none">➤ Classification (as per Bentham and Hooker), general and distinguishing characters and economic importance of following angiosperm families:<ul style="list-style-type: none">• Tiliaceae• Convolvulaceae• Euphorbiaceae• Palmaceae	



VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B.Sc. SEMESTER - III
FRAMED ACCORDING TO NATIONAL EDUCATION POLICY (NEP) 2020
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BOP-MJ-203
BOTANY (MAJOR) PRACTICAL – 203

BOP-MJ-203:	BOTANY (MAJOR) PRACTICAL – 203 : BASED ON BO-MJ-201 & BO-MJ-202	2 credits (60 Hours)
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- The candidates should study their environment and the typical vegetation in natural condition and should record their observation in journals.
- Excursion should be arranged during the year to local places.
- Every candidate shall complete laboratory course in accordance with the regulations issued from time to time by Academic Council on the recommendation of the Board of Studies
- Every candidate shall record observation directly in the laboratory journal. Every journal shall be signed periodically.
- At the end of the semester candidate shall produce certified journal during the practical examination

PART A –PTERIDOPHYTES (10 Hours)

1. Study of external morphology of *Equisetum* using fresh or preserved specimen.
2. Study of anatomy of internode of *Equisetum* using fresh or preserved specimen
3. Study of spore producing organ/Strobilus of *Equisetum* using fresh or preserved specimen
4. Study of T.S. aerial shoot, L.S. Cone and T.S. Cone of *Equisetum* using permanent slides
5. Preparation of slides from the fresh/preserved material Cone of *Equisetum*.

PART B-GYMNOSPERMS: (10 hours)

6. To study external morphology of *Pinus* using fresh or preserved material.
7. To study T.S. of *Pinus* Needle/Leaf using fresh/preserved specimen.
8. To study morphology of male cone of *Pinus* using fresh/preserved specimen.
9. To study morphology of female cone of *Pinus* using fresh/preserved specimen.
10. To study anatomy of *Pinus* shoot, needle, male and female cone using permanent slides

PART C- ANATOMY: (10 hours)

11. To study meristematic tissues (RAM & SAM) through permanent slides/charts.
12. To study simple tissue types (Parenchyma, Collenchyma, Sclerenchyma, Aerenchyma, Chlorenchyma) through permanent slides/charts.
13. To study complex tissue (Xylem & Phloem elements) through permanent slides/charts.
14. To study various types of stele (Plectostele, Actinostele; Amphiphloic siphonostele, Eustele, Atactostele) using fresh/preserved specimen/slides and charts.

15. To study various types of vascular bundles (Radial, Collateral open, Collateral closed, Conjoint bi-collateral) using fresh and preserved specimens/slides/charts.

PART D-Morphology and Systematics (30 hours)

16. To study simple dry fruits using preserved specimen/charts.
17. To study simple fleshy fruits using preserved specimen/charts.
18. To study aggregate fruits using preserved specimen/charts.
19. To study multiple or composite fruits using preserved specimen/charts.
20. To study parts of typical dicot seeds (kidney bean) using fresh or preserved specimen.
21. To study parts of typical monocot seed (maize) using fresh or preserved specimen.
22. Study of morphological characters, floral dissection, T.S. of ovary, and floral formula of Tiliaceae family.
23. Study of morphological characters, floral dissection, T.S. of ovary, and floral formula of Convolvulaceae family.
24. Study of morphological characters, floral dissection, T.S. of ovary, and floral formula of Euphorbiaceae family.
25. Study of morphological characters, floral dissection, T.S. of ovary, and floral formula of Palmaceae family.

REFERENCES:

1. College Botany Vol I - III Gangulee, et al. 5th Edi. 1990 New central book agency Calcutta
2. College Botany A. C. Datta 3rd Edi. 1989 Oxford Bombay
3. Taxonomy of Angiosperms V. Singh 1st Edi. 1981 Rastogi pub.
4. Cryptogamic Botany Vol. I - II G.M Smith 2nd Edi. 1955 Tata Mc Grow Hill Bombay.
5. A text Book of Botany paper III Dr. T G Gohil and Dr. Alpesh B. Thakor 1st Edi. 2019 Popular prakashan, Surat.
6. Botany for Degree Student- P.C. Vashishta 1st Edi
7. Modern Practical Botany Vol. II B.P. Pandey 1995 S. Chand & Company, New Delhi.
8. Taxonomy of Angiosperms V. Singh 1st Edi. 1981 Rastogi pub.
9. A Text Book of Practical Botany Vol. I & II by Bendre & Kumar, Rastogi Publication.
10. College Botany Practical Vo. I & II by Santra, Chatterjee & Das
11. Modern Practical Botany Vol. II B.P. Pandey 1995 S. Chand & Company, New Delhi.
12. Pandey B P 2011. College Botany (Vol. 3). S. Chand & Co. Ltd, New Delhi, India
13. A text book of Botany vol. II (Bryophyta, Pteridophyta, Gymnosperms & Paleo Botany) Pandey et al. - Vikash publishing House pvt. Ltd., New Delhi

14. Botany for Degree Student- P.C. Vashishta
15. Modern Practical Botany Vol. II B.P. Pandey 1995 S. Chand & Company, New delhi.
16. Taxonomy of Angiosperms V. Singh 1st Edi. 1981 Rastogi pub.
17. Botany [for degree students] Bryophyta by B.R. vashishta; S.Chand and Co.
18. Botany for degree students: Pteridophyta by P. C. Vasishta; S. Chand and Co (Pvt.) Ltd
19. College Botany Vol. I - III Gangulee, etal 5th Edi. 1990 New central book agency Calcute
20. College Botany A. C. Datta 3rd Edi. 1989 Oxford Bombay
21. Vansptishastra J V Joshi & H K Patel 4th edi. 2002 Popular prakashan, Surat
22. A text book of Botany vol. II (Bryophyta, Pteridophyta, Gymnosperms & Paleo Botany)
Pandey etal. - Vikash publishing House pvt. Ltd., New Delhi
23. Plant Anatomy B.P. Pandey 1st Edi 1978 S. Chand & Company, New delhi
24. A Text Book of Botany (Semester II) Dr. T G Gohil and Dr. Alpesh B. Thakor 1st Edi.
2018 Popular prakashan, Surat
25. A Text Book of Practical Botany Vol. I & II by Bendre & Kumar, Rastogi Publication
26. College Botany Practical Vo. I & II by Santra, Chatterjee & Das.



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SYLLABUS FOR B.Sc. SEMESTER - II
FRAMED ACCORDING TO NATIONAL EDUCATION POLICY (NEP) 2020
(Effective from December 2023)
BO-ME-201
BOTANY (MINOR) PAPER – 201

BO-ME-201	ANATOMY & TRACHEOPHYTES	(2 credits)
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BO-ME-201	ANATOMY & TRACHEOPHYTES	30 Hours
UNIT 1	ANATOMY	15 Hours
	<ul style="list-style-type: none">➤ Meristematic Tissues-Characteristics of Meristematic tissue, Types of meristematic Tissues, Function of meristematic tissues➤ Permanent Tissue (Simple and Complex): Introduction, Types and Its function & Significance.➤ Vascular Bundle and Stele: Definition and Types	
UNIT 2	PTERIDOPHYTES AND GYMNOSPERMS	15 hours
	<ul style="list-style-type: none">➤ General Characters of Pteridophytes & Gymnosperms➤ Life cycle of Pteridophytes and Gymnosperms with special reference to Gametophyte and Sporophyte generation➤ Classification, Occurrence and morphology, anatomy and life cycle (excluding development) of the following genera: <i>Equisetum</i>, <i>Pinus</i>➤ Economic and Ecological importance of Pteridophytes and Gymnosperms	



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SYLLABUS FOR B.Sc. SEMESTER - II
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BOP-ME-202
BOTANY (MINOR) PRACTICAL – 202

BOP-ME-202	BOTANY (MINOR) PRACTICAL – 202 :BASED ON BO-ME-201	(2 credits)
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BOP-ME-202	<u>BASED ON BO-ME-201: ANATOMY & TRACHEOPHYTES</u>	60 hours
	<u>PART A- ANATOMY: (20 hours)</u> <ol style="list-style-type: none">1. To study meristematic tissues (RAM & SAM) through permanent slides/charts2. To study simple tissue types (Parenchyma, Collenchyma, Sclerenchyma, Aerenchyma, Chlorenchyma) through permanent slides/charts3. To study complex tissue (Xylem & Phloem elements) through permanent slides/charts4. To study various types of stele (Plectostele, Actinostele; Amphiphloic siphonostele, Eustele, Atactostele) using fresh/preserved specimen/slides and charts.5. To study various types of vascular bundles (Radial, Collateral open, Collateral closed, Conjoint bi-collateral) using fresh and preserved specimens/slides/charts	
	<u>PART B –PTERIDOPHYTES (20 hours)</u> <ol style="list-style-type: none">6. Study of external morphology of <i>Equisetum</i> using fresh or preserved specimen7. Study of anatomy of internode of <i>Equisetum</i> using fresh or preserved specimen8. Study of spore producing organ/Strobilus of <i>Equisetum</i> using fresh or preserved specimen9. Study of T.S. of <i>Equisetum</i> aerial shoot using permanent slides10. Study of L.S. of <i>Equisetum</i> Cone using permanent slides.	

11. Study of T.S. Cone of *Equisetum* using permanent slides.

PART C-GYMNOSPERMS: (20 hours)

12. To study external morphology of *Pinus* using fresh or preserved material.

13. To study T.S. of *Pinus* Needle/Leaf using fresh/preserved specimen

14. To study morphology of male cone of *Pinus* using fresh/preserved specimen

15. To study morphology of female cone of *Pinus* using fresh/preserved specimen

16. To study anatomy of *Pinus* shoot using permanent slides

17. To study anatomy of needle/leaf of *Pinus* using permanent slides

18. To study anatomy of female cone of *Pinus* using permanent slides

REFERENCES:

1. College Botany Vol I - III Gangulee, et al. 5th Edi. 1990 New central book agency Calcutta
2. College Botany A. C. Datta 3rd Edi. 1989 Oxford Bombay
3. Cryptogamic Botany Vol. I - II G.M. Smith 2nd Edi. 1955 Tata MCGraw Hill Bombay.
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5. A Text Book of Practical Botany Vol I & II by Bendre & Kumar, Rastogi Publication
6. College Botany Practical Vo. I & II by Santra, Chatterjee & Das
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8. A text book of Botany vol. II (Bryophyta, Pteridophyta, Gymnosperms & Paleo Botany) Pandey et al. - Vikash publishing House pvt. Ltd., New Delhi
9. Botany for Degree Student- P.C. Vashishta
10. Modern Practical Botany Vol. II B P. Pandey 1995 S. Chand & Company, New delhi
11. Botany for degree students: Pteridophyta by P. C. Vasishta; S. Chand and Co (Pvt.) Ltd
12. College Botany Vol. I - III Gangulee, et al. 5th Edi. 1990 New central book agency Calcutta
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14. Plant Anatomy B P. Pandey 1st Edi 1978 S. Chand & Company, New delhi
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SYLLABUS FOR B.Sc. SEMESTER - II
FRAMED ACCORDING TO NATIONAL EDUCATION POLICY (NEP) 2020
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Multidisciplinary Courses
BO-MDC-201 : ECONOMIC BOTANY

BO-MDC-201	Multidisciplinary Courses : ECONOMIC BOTANY	(2 credits)
BO-MDC-201	Multidisciplinary Courses : ECONOMIC BOTANY	30 hours
UNIT 1	CEREALS, PULSES, SPICES AND OILS	15 hours
	<p>➤ To study economic importance of following plants including botanical name, family, part used, external morphology, cultivation and their uses</p> <ul style="list-style-type: none">• Cereals - Rice, Wheat, Maize• Pulses – Chick Pea (Chana), Pigeon pea (Toor), Green gram (Moong)• Spices – Cardamom, Black pepper, Turmeric• Oils – Groundnut, Castor, Sesame	
UNIT 2	FIBRES, TIMBERS, DYES AND BEVERAGES	15 hours
	<p>➤ To study economic importance of following plants including botanical name, family, part used, external morphology, cultivation and their uses</p> <ul style="list-style-type: none">• Fibres – Cotton, Jute, Coir• Timbers – Teak (<i>Tectona grandis</i>), Shisham (<i>Dalbergia</i> sp.), Sevan (<i>Gmelina arborea</i>)• Dyes – Sinduri (<i>Bixa orellana</i>), Mehendi (<i>Lawsonia inermis</i>)• Beverages – Tea, Coffee, Cocoa	



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SYLLABUS FOR B.Sc. SEMESTER - II
FRAMED ACCORDING TO NATIONAL EDUCATION POLICY (NEP) 2020
(Effective from December 2023)
Multidisciplinary Course Practical
BOP-MDC-202 : ECONOMIC BOTANY

BOP-MDC-202	Multidisciplinary Practical : Economic Botany	(2 credits)
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BOP-MDC-202	Multidisciplinary Course Practical : Economic Botany	60 hours
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	<ol style="list-style-type: none">1. To study economic importance of Cereals – Rice, Wheat, Maize (botanical name, family, part used, external morphology and their uses)2. To study economic importance of Pulses – Chick Pea (Chana), Pigeon pea (Toor), Green gram (Moong) (botanical name, family, part used, external morphology and their uses)3. To study economic importance of Spices – Cardamom, Black pepper, Turmeric (botanical name, family, part used, external morphology and their uses)4. To study economic importance of Fibres – Cotton, Jute, Coir (botanical name, family, part used, external morphology and their uses)5. To study economic importance of Timber – Teak, Shisham, Sevan (<i>Gmelina arborea</i>) (botanical name, family, part used, external morphology and their uses)6. To study economic importance of Dyes – Sinduri (<i>Bixa orellana</i>), Mehendi (<i>Lawsonia inermis</i>) (botanical name, family, part used, external morphology and their uses)7. To study economic importance of Beverages – Tea, Coffee, Cocoa (botanical name, family, part used, external morphology and their uses)8. To study economic importance of Oil – Groundnut, Castor, Sesame	
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(botanical name, family, part used, external morphology and their uses)

9. To detect the presence of reducing sugar
10. To detect the presence of non-reducing sugar
11. To study and observe starch grains
12. To detect the presence of proteins
13. To detect the presence of lipids

REFERENCES:

- Directory of Economic Plants in India by Maheshwari P. And Singh U. ; ICAR New Delhi
- Economic Botany by Bendre and Kumar ; Rastogi Publications
- Kochhar, S L. (2012). Economic Botany in Tropics, MacMillan & Co. New Delhi, India.
- Samba Murty and Subrahmanyam (2011). Text Book of Modern Economic Botany, CBS Publishers and Distributors, New Delhi.
- Hill, Albert F. Economic Botany, Tata Mc Grow Hill Publishing Company, Ltd. New Delhi.
- Wickens, G.E. (2001). Economic Botany: Principles & Practices. Kluwer Academic Publishers, The Netherlands.
- Singh, Pandey and Jain (2017). Economic Botany, Rastogi Publication, Meerut
- B. Baruah (2017). Economic Botany, Kalyani Publishers, New Delhi.



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SYLLABUS FOR B.Sc. SEMESTER - II

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Skill Enhancement Courses

BO-SEC-201 : Introduction to Ethnobotany & Pharmacognosy

BO-SEC-201	Skill Enhancement Courses - Introduction to Ethnobotany & Pharmacognosy	(2credits)
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BO-SEC-201	Skill Enhancement Courses - Introduction to Ethnobotany & Pharmacognosy	30 hours
UNIT 1	INTRODUCTION TO ETHNOBOTANY AND PHARMACOGNOSY	15 Hours
	<ul style="list-style-type: none">➤ Introduction, different systems of medicine (Ayurvedic, Siddha, Homeopathy)➤ Ethnobotany and its importance in medicine➤ Common and rare medicinal plants of South Gujarat➤ (Principal active compounds and pharmacological uses)	
UNIT 2	PRODUCTION & EXTRACTION OF CRUDE DRUGS	15 Hours
	<ul style="list-style-type: none">➤ Cultivation, Collection, Drying, Garbling, Packaging, Storage, Preservation, Sterilization.➤ Different Extraction methods (Maceration, Percolation, Extraction- continuous (Soxhlet), aqueous (decoction, Infusion, Digestion, Tincture)➤ Chromatography- paper & Thin layer	

REFERENCES:

1. Vinod D Rangari. Pharmacognosy & Phytochemistry Vol.1
2. Biren Shah & A. K. Seth. Textbook of Pharmacognosy & Phytochemistry.
3. S. B Gokhale Pharmacognosy Vol 1
4. Michael Heinrich et al Fundamentals of Pharmacognosy and Phytotherapy. 4th Edition



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Skill Enhancement Courses
BO-SEC-201 : Basics to Herbal Crude Drugs

BO-SEC-201	Skill Enhancement Courses - Basics to Herbal Crude Drugs	(1 credits)
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BO-SEC-201	Skill Enhancement Courses - Basics to Herbal Crude Drugs	15 hours
UNIT 1	PRODUCTION & EXTRACTION OF CRUDE DRUGS	15 Hours
	<ul style="list-style-type: none">➤ Cultivation, Collection, Drying, Garbling, Packaging, Storage, Preservation, Sterilization.➤ Different Extraction methods (Maceration, Percolation, Extraction- continuous (Soxhlet), aqueous (decoction, Infusion, Digestion, Tincture).➤ Chromatography- paper & Thin layer	

REFERENCES:

1. Vinod D Rangari Pharmacognosy & Phytochemistry Vol.1
2. Biren Shah & A. K. Seth. Textbook of Pharmacognosy & Phytochemistry.
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Skill Enhancement Course Practical
BOP-SEC-202 : **Basics to Herbal Crude Drugs**

BOP-SEC-202	Skill Enhancement Course Practical - Basics to Herbal Crude Drugs	(1 credits)
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BOP-SEC-201	Skill Enhancement Course Practical - Basics to Herbal Crude Drugs	30 hours
	<ol style="list-style-type: none">1. Collection of different plant organ based on medicinal plants.2. Drying, Garbling and Storage of collected parts as crude medicine3. Conduct the extraction through maceration.4. Conduct the extraction through Percolation.5. Conduct the extraction through Soxhlet.6. Conduct the extraction through decoction.7. Conduct the extraction through Infusion.8. Conduct the extraction through Digestion.9. Conduct the extraction through Tincture.10. Paper chromatography or TLC of the crude extract of medicinal plant.11. Perform qualitative analysis of primary metabolite.12. Perform qualitative analysis of secondary metabolite13. To identify crude drugs by using organoleptic method – Cinnamon, Clove, Fennel, Harde.	

REFERENCES:

1. Vinod D Rangari. Pharmacognosy & Phytochemistry Vol. I
2. Biren Shah & A. K. Seth. Textbook of Pharmacognosy & Phytochemistry.
3. S. B Gokhale Pharmacognosy Vol I
4. Michael Heinrich et al Fundamentals of Pharmacognosy and Phytotherapy. 4th Edition