



Revised Syllabus

(Choice Based Credit System, CBCS)

Sem. V & Sem. VI

Program: T.Y.B.A.

Course: Marathi -IV

2018-19 to 2021-22


PRINCIPAL

Loknath Gopinath Munde
Arts, Commerce & Science College
Mandengad, Dist. Ratnagiri.415203

अभ्यासपत्रिका क्र. ४. मध्ययुगीन मराठी वाङ् मयाचा इतिहास.
सत्र - ५वे (श्रेयांकने-४) व्याख्याने -६०

घटक -१ मराठी साहित्याची सुरुवात व महानुभावीय वाङ् मय

अ) मराठी साहित्याची सुरुवात - मराठी : देशीभाषा म्हणून ८, ९वे शतक परिचय, मराठीतील आद्यसंघ : चर्चा, शिलालेख, ताद्यपट यावरील मराठी लेखन - चोडक्यात परिचय

ब) महानुभाव संप्रदायाची ठळक वैशिष्ट्ये - शैली तत्त्वज्ञान, पंचकृष्ण, लजधरांचे व्यक्तिमत्त्व, मराठीचा स्वीकार व आग्रह, मार्केतिक लिपी

महानुभावीय वाङ् मय : चरित्रसंघ, तत्त्वज्ञानसंघ, सातीसंघ, स्पुट गद्य-पद्य-धक्के, टीकासंघ, व्याकरणसंघ.

घटक -२ वारकरी पंथीयांचे वाङ् मय -

अ) सादवकालीन महाराष्ट्रात वारकरी पंथाची प्रस्थापना, पंथीचा भक्तीसंप्रदाय हा महाराष्ट्रातील प्रमुख वारकरी संप्रदाय म्हणून तेराव्या शतकात धार्मिक, सामाजिक व साहित्यिक दृष्ट्या प्रभावी

ब) ज्ञानदेव-नामदेव व त्यांच्या पंथावळीतील इतरांचे वाङ् मय.

घटक ३ वारकरी पंथीयांचे वाङ् मय -

अ) बहामनी राजवट, एकनाथकालीन महाराष्ट्र, तमोयुग, एकनाथ, एकनाथपंचक यांचे वाङ् मय

ब) शिवकालीन महाराष्ट्र - स्वराज्य प्रेरणा, तुकाराम, तुकारामाचे शिष्य यांचे वाङ् मय

घटक ४ पंडिती काव्य-

अ) पंडिती काव्याची स्वरूपवैशिष्ट्ये, पंडिती काव्याचे गुणदोष चर्चा

ब) पंडित कवी- मुक्तेश्वर, मोरोपंत, रघुनाथ पंडित, सामराज, निरंजनमाधव, वामनपंडित, नागेश, विठ्ठल

सत्रान्त परीक्षा (गुण १००)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह)	गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह)	गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह)	गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह)	गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह)	गुण २०

सत्र - ६वे (श्रेयांकने-४) व्याख्याने -६०

घटक -१ शाहिरी वाङ् मय-

अ) लावणी, पोवाडे, या काव्य प्रकारांची स्वरूप वैशिष्ट्ये.

ब) काही लावणीकार- होनाजी वाळा, रामजोशी, प्रभाकर, अनंत फंदी, परशुराम या शाहिरांचा व त्यांच्या साहित्याचा परिचय.

घटक -२ महानुभाव व वारकरी यांखेरीज इतर पंथीयांचे वाङ् मय

अ) नाथ, दत्त या पंथातील वाङ् मयाचे स्वरूप.

ब) समर्थ, लिंगायत या पंथातील वाङ् मयाचे स्वरूप


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घटक - ३ हिंदू धर्माखेरीज इतर धर्मियांनी केलेली वाङ् मयनिर्मिती

अ) ख्रिस्ती धर्मियांनी केलेली वाङ् मयनिर्मिती

(ख्रिस्ती - फादर स्टीफन्स, कुर्जो, मालंडाज, पाटी अल्बेच)

ब) इस्लामी धर्मियांनी केलेली वाङ् मयनिर्मिती

(इस्लामी - मुंजोजी (मुत्सुंजय), हुमेन अंबरखान, शेख महमंद, शहामुनी)

घटक - ४ बखर गद्याची स्वरूप वैशिष्ट्ये

- अ) बखरी- शिवपूर्वकालीन - मंत्रिकावतीची उर्फ माहीमची बखर, राक्षसतागडीची लढाई.
बखरी- शिवकालीन- शिवछत्रपतीचे चरित्र- कृष्णाजी अनंत मभागद, चित्रगुप्तविरचित शिवाजी महाराजांची बखर, श्री छत्रपतीची ९१ कलमी बखर - दत्तोत्रिमल वाकेनिस, मल्हार रामराव विटणीस विरचित श्री शिवछत्रपतींचे समप्रकरणात्मक चरित्र.
ब) बखरी - पेशवेकालीन- नाना फडणवीसाचे आत्मचरित्र, श्री रामदास स्वामीचे चरित्राची बखर उर्फ हनुमंत स्वामीची बखर, पेशव्यांची बखर, कृष्णाजी विनायक सोहनी, पानिपतची बखर- रघुनाथ यादव, भाऊसाहेबांची बखर-कृष्णाजी शामराव, खडग्याच्या स्वारीची बखर.

सत्रान्त परीक्षा (गुण १००)

प्रश्न १. घटक १ वर आधारित प्रश्न (पर्यायासह)	गुण २०
प्रश्न २. घटक २ वर आधारित प्रश्न (पर्यायासह)	गुण २०
प्रश्न ३. घटक ३ वर आधारित प्रश्न (पर्यायासह)	गुण २०
प्रश्न ४. घटक ४ वर आधारित प्रश्न (पर्यायासह)	गुण २०
प्रश्न ५. सर्व घटकांवर आधारित दोन टीपा (पर्यायासह)	गुण २०

संदर्भ ग्रंथ-

- १) जोग, रा.श्री. व इतर (संपा.) मराठी वाङ् मयाचा इतिहास- खंड ३, महाराष्ट्र साहित्य परिषद, पुणे, प.आ. १९७३.
- २) तुळेपुळे, शं.गो., पाच संतकवी, सुविचार प्रकाशन मंडळ, पुणे, १९८४, (ति.आ.)
- ३) तुळेपुळे, शं. गो. व इतर (संपा.) मराठी वाङ् मयाचा इतिहास- खंड १, महाराष्ट्र साहित्य परिषद, पुणे, प.आ. १९८४.
- ४) मालशे, सं.गं. व इतर (संपा.) मराठी वाङ् मयाचा इतिहास- खंड २ भाग १ व भाग २, महाराष्ट्र साहित्य परिषद, पुणे, प.आ. १९८२.
- ५) भावे, वि.ल. महाराष्ट्र सारस्वत, पॉप्युलर, मुंबई, आ. ५ वि १९६३.
- ६) धोंड, म. वा., (संपा.) मन्हाटी लावणी, मौज, मुंबई १९५६.
- ७) शेणोलीकर, ह. श्री., प्राचीन मराठी वाङ् मयाचे स्वरूप, मोघे प्रकाशन, कोल्हापूर, १९७१.
- ८) सहखबुद्धे, म. ना., मराठी शाहिरी वाङ् मय, ठोकळ पुणे, १९६१.
- ९) सरदार गं.वा., संत साहित्याची सामाजिक फलश्रुती, म. सा.पु. पुणे १९७० (ति.आ.)

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UNIVERSITY OF MUMBAI



Revised Syllabus
(Choice Based Credit System, CBCS)
Sem. V & Sem. VI
Program: T.Y.B.A.
Course: Marathi -IV
2015-16 to 2017-18


PRINCIPAL
Loknete Ganeshji Munde
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Item No. _____

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. (MARATHI)
2	Eligibility for Admission	F.Y.B.A. Pass
3	Passing Marks	40
4	Ordinances / Regulations (if any)	Nil
5	No. of Years / Semesters	01 (Two Semester)
6	Level	U.G.
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year 2021-22

Name & Signature of BOS Chairperson :

Name & Signature of Dean:

PRINCIPAL

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भाषा आणि बोली अभ्यास

उद्दिष्टे (Objective)

- १) भाषेचे स्वरूप समजून घेणे
- २) भाषाबोली समाजाचा परस्पर संबंध अभ्यासणे
- ३) बोलीचे स्वरूप व विषय समजून घेणे

घटक १ (अ) मानवी भाषेचे स्वरूप, एकूण व्याख्याने १५, घेयांकने १

- संश्लेषण - मानवी आणि मानवैतराचे, मानवाने भाषिक व भाषेतर संश्लेषण, मानवी भाषेची लक्षण किंवा स्वरूप विशेष (ध्वन्यात्मकता, चिन्हात्मकता, वाच्यता, वर्तनशीलता, प्रत्यक्षाशीलता, सामाजिकता, परिवर्तनशीलता इ.) मानवी भाषेच्या व्याख्या
- (आ) भाषेची विविध कार्ये - रोमान वाक्यरचनेचे संश्लेषणाचे नमुनाकार्य व ६ भाषिक कार्ये (निर्देशात्मक, आविष्कारात्मक, परिणामनिष्ठ, सौंदर्यात्मक, संपर्कनिष्ठ, अतिभाषात्मक)

घटक २ (अ) भाषा, समाज आणि संस्कृती - एकूण व्याख्याने १५, घेयांकने १

भाषा - एक सांस्कृतिक मंचित, सांस्कृतिक जडणघडणीचे, संक्रमणाचे माध्यम एडवर्ड नपीरचेजामीन वॉर्फ, यांचा भाषिक सापेक्षतावादाचा अभ्युपगम भाषेकडे पाहण्याचा समाज भाषावैज्ञानिक दृष्टिकोण, समाजातील भाषावैविध्य आणि भाषेचा बहुजनस्वीयता, भाषिकसांस्कृतिक विविधता परस्परसंबंध

आ) भाषा, प्रमाण भाषा आणि बोली : संकल्पना विचार व्याख्याने १५ घेयांकने १

'प्रमाण भाषा' म्हणजे काय, प्रमाण भाषेची आवश्यकता, प्रमाण भाषा व बोली यांच्यातील संबंध, त्यांचे वापरक्षेत्र, बोलीवैविध्य- उपबोली, स्थानिक बोली-प्रादेशिक बोली- जातिनिष्ठ बोली-सामाजिक बोली इ., बोलीविषयीचे गैरसमज (शुद्धाशुद्धता, श्रेष्ठकनिष्ठता, अंगभूत क्षमता इ.) व तथ्ये, मराठीच्या विविध बोली

घटक ३ (अ) बोलीच्या अभ्यासाची गरज व महत्त्व

बोलीविज्ञान (Dialectology), बोलीच्या अभ्यासाची दिशा - बोलीचा विज्ञानात्मक अभ्यास, सामाजिक-सांस्कृतिक अभ्यास, बोलीच्या अभ्यासाची साधने, क्षेत्रीय कार्य (Field Work), बोलीची व्याकरणे व कोशरचना यांचे महत्त्व, बोलीसमोरील आव्हाने व त्यांचे जतन व संवर्धन यांसाठी करावयाच्या प्रयत्नांची दिशा

आ) मराठीतील प्रमुख बोली : वऱ्हाटी, अहिराणी, कोकणी बोलीचे स्वरूप विशेष

इ) मालवणी व आगरी बोलींची वैशिष्ट्ये- व्युत्पत्ती आणि विकास, व्याकरणिक वैशिष्ट्ये, उच्चार प्रक्रिया, म्हणी, वाक् प्रचार, शब्दसंग्रह इ.


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Revised Syllabus

(Choice Based Credit System, CBCS)

Sem. III & Sem. IV

Program: S.Y.B.A.

Course: Marathi -III

2017-18 to 2020-21

PRINCIPAL
Loknete Gopinathji Munde
Arts, Commerce & Science College
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SYBA - PAPER NO. III

(To be implemented from 2017-2018)

द्वितीय वर्ष, कला, मराठी अभ्यासपत्रिका क्र. ३

द्वितीय वर्ष, कला (मराठी) अभ्यासपत्रिका क्र. ३ च्या अभ्यासक्रमातील तिस-या व चौथ्या सत्रासाठी एकूण चार नव्या अभ्यासपत्रिका - "३०१ भाषा आणि भाषाभ्यास", ४०१ "मराठीच्या बोलीचा अभ्यास: आगरी बोली", ४०२ "मराठीच्या बोलीचा अभ्यास: मालवणी बोली", ४०३ "मराठीच्या बोलीचा अभ्यास: वाडवळी बोली" नेमण्यात आल्या आहेत. यापैकी तिसऱ्या सत्रासाठी अभ्यासपत्रिका क्र. "३०१ भाषा आणि भाषाभ्यास" ही सर्व महाविद्यालयांसाठी अनिवार्य असून, चौथ्या सत्रासाठी तीन पर्यायी स्वरूपाच्या अभ्यासपत्रिका नेमल्या आहेत; या अभ्यासपत्रिकांपैकी कोणतीही एक अभ्यासपत्रिका संबंधित महाविद्यालयाने निवडायची असून आगामी तीन वर्षांसाठी संबंधित महाविद्यालयाने विशिष्ट अभ्यासपत्रिकेची केलेली निवड अपरिहार्य राहिल, त्यांना आपल्या निवडीत बदल करता येणार नाही. या अभ्यासक्रमाची श्रेयांकन पद्धतीनुसार रचना करण्यात आली आहे. वरील अभ्यासक्रम दोन सत्रांत विभागलेला असून, नेमलेल्या विशिष्ट तासिकांमध्ये तो शिकविला जाणे आवश्यक आहे.

सत्र चारसाठी महाविद्यालयांना ४०१ मराठीच्या बोलीचा अभ्यास: आगरी बोली; ४०२ मराठीच्या बोलीचा अभ्यास: मालवणी बोली किंवा ४०३ मराठीच्या बोलीचा अभ्यास: वाडवळी बोली या चार अभ्यासपत्रिकांपैकी कोणत्याही एकाच अभ्यासपत्रिकेची निवड करावी लागेल. संबंधित महाविद्यालयाच्या यापूर्वी निर्धारित व मान्य झालेल्या तासिकांमध्ये कोणत्याही प्रकारची वाढ करता येणार नाही.

सत्र ३, अभ्यासपत्रिका क्र. ३, एकूण व्याख्याने ४५, श्रेयांकने ३

भाषा आणि भाषाभ्यास

घटक १ (अ) मानवी भाषेचे स्वरूप, एकूण व्याख्याने १५, श्रेयांकने १

संप्रेषण - मानवी आणि मानवेतरांचे, मानवांचे भाषिक व भाषेतर संप्रेषण, मानवी भाषेची लक्षणे किंवा स्वरूप विशेष (ध्वन्यात्मकता, चिन्हात्मकता, यादृच्छिकता, सर्जनशीलता, प्रत्यक्षातीतता, सामाजिकता, परिवर्जनशीलता इ.) मानवी भाषेच्या व्याख्या



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प्रश्न क्र. ३ घटक ३ वर अंतर्गत पर्यायामह एक प्रश्न (गुण २०)
प्रश्न क्र. ४ घटक १, २ व ३ यांवर अंतर्गत पर्यायामह तीन टिप्पणी (गुण ३०)
प्रश्न क्र. ५ घटक १, २ व ३ यांवर अन्तुनिष्ठ स्वरुपाचे ९ पैकी कोणतेही ५ प्रश्न सोडविणे (गुण १०)

SEM - 4 (UAMAR 401)

सत्र - ४ (चौथे) एकूण व्याख्याने ४५, श्रेयांकने ३

द्वितीय वर्ष बी.ए. मराठी अभ्यासपत्रिका क्र. 401 : मराठीच्या बोलींचा अभ्यास: आगरी बोली

घटक १ एकूण व्याख्याने १५, श्रेयांकने १

अ) आगरी बोलीची वैशिष्ट्ये- व्युत्पत्ती आणि विकास, व्याकरणिक वैशिष्ट्ये, उच्चार प्रक्रिया-
म्हणी, वाक् प्रचार, शब्दसंग्रह इ.

आ) आगरी लोकसंस्कृती, आगरी बोलीचे प्रभाव क्षेत्र, आगरी साहित्याचा इतिहास

घटक २ एकूण व्याख्याने १५, श्रेयांकने १

आगरी बोलीतील निवडक कवितांचा अभ्यास: १) पानी कवा येनार, सारेबाराचा पलाट,
मायच्यं सुरक्याची गोदरी- प्रा. एल्. बी. पाटील, २) आगरी-कोळी, आय-चंद्रकांत मडवी, ३) आबचा
आगोर- डॉ. संजीव म्हात्रे, ४) मीठ, नवी मुंबई- रामनाथ म्हात्रे, ५) इनकूरी, आमी जातीच हाव
आगरी- पुंडलिक म्हात्रे, ६) जमिनीचा तुकरा, लोखांचा राज (आगरी फटका)- म. वा. म्हात्रे, ७) बंदर,
खोपट- मुकेश कांबळे, ८) आलं कंपनीवालं आलं सौ. सुनंदा मोडखरकर, ९) पायंडा- सौ. शोभना
रामकृष्ण पाटील, १०) एस्ई. झेड नवरा- गणपत म्हात्रे, ११) खलाटी- अविनाश पाटील, १२)
दिप्तीला गाव सारा धावला- दिनानाथ वेदू पाटील, १३) आमचेकरं आता परकल्प आयलय- विश्वास

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अ) मालवणी बोलीची वैशिष्ट्ये- व्युत्पत्ती आणि विकास, व्याकरणिक वैशिष्ट्ये, उच्चार प्रक्रिया-
म्हणी, वाक् प्रचार, शब्दसंग्रह इ.

आ) मालवणी लोकसंस्कृती, मालवणी बोलीचे प्रभाव क्षेत्र, मालवणी साहित्याचा इतिहास

घटक २: एकूण तासिका १५, श्रेयांकन १

नाटक: चाकरमानी- सुंदर तळाशीकर, भॅजेस्टीक प्रकाशन- आशय, पात्रचित्रण, अवकाश,
संवादभाषा, बोली वैशिष्ट्ये इ.

घटक ३: एकूण तासिका १५, श्रेयांकन १

मालवणी बोलीतील कवितांचा अभ्यास

- १) ठेव झिला घराची आठव रे, चल चेडवा पडावात्मून आगबोटीत- विठ्ठल कृष्ण नेरूरकर
- २) आज्ञान माझान, आराड गे वेडके सांन जांवदे- वसंत सावंत
- ३) व्हनीवाय जुन्यार दी गे, वाळगो आणि मालग्या- महेश केळुसकर
- ४) वाडवाळ, झेटलीमन- नारायण परब
- ५) नया घराचो पावो खनताना, वारूळ- प्रवीण बांदेकर
- ६) वांगड, शवय- सई लळीत
- ७) नामू कुळकार, मालवण मेवो- अविनाश बापट
- ८) जत्रा, पावस इलो पावस- दादा मडकईकर
- ९) खेळे, भातलय- नामदेव गवळी
- १०) शेताभातातलो शिरवान, तांबेट पसरलेल्या माटवात- अजय कांडर
- ११) दर्या राजा, माय- रुजारिओ पिंटो
- १२) तावडन आजी, गटारी- सुनंदा कांबळे

चतुर्थ सत्रांत परीक्षेचे स्वरूप

- प्रश्न क्र. १ घटक १ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)
प्रश्न क्र. २ घटक २ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)
प्रश्न क्र. ३ घटक ३ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)


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Cover Page

AC _____
Item No. _____**UNIVERSITY OF MUMBAI****Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. (MARATHI)
2	Eligibility for Admission	F.Y.B.A. Pass
3	Passing Marks	40
4	Ordinances / Regulations (if any)	Nil
5	No. of Years / Semesters	01 (Two Semester)
6	Level	U.G.
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year 2021-22

Name & Signature of BOS Chairperson :

Name & Signature of Dean:

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मुंबई विद्यापीठ
द्वितीय वर्ष बी.ए.
मराठी

अभ्यासक्रम (CBCS)

Course Code	Core Course	No of Credits
सब ३१		
UAMAR ३०१	कथन साहित्य	३
UAMAR ३०२	भाषा आणि बोली अभ्यास	३
सब ४ वे		
UAMAR ४०१	नाट्य साहित्य	३
UAMAR ४०२	मराठी व्याकरण आणि लेखन कौशल्ये (स्पर्धा परीक्षा)	३



PRINCIPAL

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SYBA - MAR - (II)
(To be implemented from 2021-2022)

द्वितीय वर्ष बी. ए. मराठी अभ्यासपत्रिका क्र.२ कथन साहित्य
मार्क ३ (विमर) - एकूण व्याख्यान ४५ - श्रेयांकने - ०३
उद्दिष्टे (Objective)

- १) कथन साहित्याचा परिचय करून देणे
- २) कादंबरी या वाङ्मय प्रकाराचे स्वरूप व वैशिष्ट्ये समजून घेणे
- ३) नेमलेल्या कादंबरीचे विविध घटकानुसार विवेचन व विश्लेषण करणे
- ४) कथा या वाङ्मय प्रकाराचा घटकानुसार नेमलेल्या कथानसंग्रहाचे विश्लेषण करणे

घटक-१ कथन साहित्याचा परिचय (१५ तासिका) श्रेयांकन १
अ) कथा व कादंबरी या साहित्य प्रकाराचा सैद्धान्तिक परिचय

घटक-२ 'फेसाटी - कादंबरी - नवनाथ मोरे, अक्षर वाङ्मय प्रकाशन (१५ तासिका) श्रेयांकन १

घटक-३ 'बक-याची बोंडी - समर घडम, शाब्दालय प्रकाशन (१५ तासिका) श्रेयांकन १

तृतीय सत्रान्त परीक्षा - गुण १००

वरील अभ्यासपत्रिकेचे प्रथम सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे -

प्रश्न १ - 'कथन' साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न २ - 'फेसाटी' या कादंबरीवर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ३ - "बक-याची बोंडी" कथा संग्रहावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ४ - तिन्ही गटातील सहा टीपा विचाराव्यात किंवा लघुतरी प्रश्न विचारावेत विद्यार्थ्यांनी कोणतेही चार सोडवाव्यात - गुण ४०.

१) कथन' साहित्यप्रकाराचा सैद्धान्तिक परिचय

२) 'फेसाटी'

३) "बक-याची बोंडी"

साध्ये (Outcome)

- १) मराठी साहित्यातील कथन साहित्य अभ्यासून विद्यार्थ्यांना कथन साहित्याचे विश्लेषण करून मर्म ग्रहण करता येईल
- २) कथा कादंबरी वाचताना कोणत्या दृष्टीने वाचाचे याचे ज्ञान प्राप्त होईल

संदर्भ ग्रंथ

- १) फेसाटी : चिंतन आणि मंथन, संपा. आशा मुंडे, संग्राम टेकले, अथर्व पब्लिकेशन्स, जळगाव
- २) फेसाटी विशेषांक, वारूळ त्रैमासिक दिवाळी २०१८

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सत्र -४ (बीघे) एकूण व्याख्याने ४५ - घेयांकने -३
द्वितीय वर्ग बी. ए. मराठी अभ्यासपत्रिका क्र.२

नाट्य साहित्य

उद्दिष्टे (Objective)

- १) नाटक वा बाष्प्य प्रकारची संकल्पना व त्याचे स्वरूप समजून घेणे
- २) मराठी नाट्य बाष्प्याची वाटचाल ठळक वाक्यांवाक्या लक्षात घेणे
- ३) एकांकिका या नाट्यप्रकाराचे स्वरूप व त्याची वैशिष्ट्ये जाणून घेणे
- ४) मराठीतील एकांकिका वाटचाल लक्षात घेणे
- ५) निवडक एकांकिकांचा अभ्यास करणे आणि तेथेनाचे स्वरूप वैशिष्ट्ये समजून घेणे

पटक १: नाट्य ('नाटक व एकांकिका') या साहित्यप्रकाराची ठळक वैशिष्ट्ये (१५ तासिका) घेयांकन - १

पटक २: 'आमदार सौभाग्यवती' नाटक - धीनिबाम जोशी (रा. र. बोरगडे यांच्या कादंबरीवर आधारीत नाटक)
कॉटिनेनटन प्रकाशन, (१५ तासिका) घेयांकन १

पटक ३: निवडक एकांकिकांचा अभ्यास (१५ तासिका) घेयांकन १

१. झुलता पूत - सतीश आळेकर
२. रक्तपुष्प - महेश एलकुचवार
३. जहाज फुटल आहे : दत्ता भगत
४. दुकान कुणी मांडू नये : संजय पवार
५. काजळ दुबड्या एकांताला : प्रा. विलीप परदेशी
६. कृष्णाजी केशव : प्रल्हाद जाधव
७. चिऊताई चिऊताई वार उघड : प्रदीप राणे
८. रिझावाला : चंद्रशेखर फणसळकर
९. दगड आणि माती : दत्ता पाटील

चतुर्थ सत्रान्त परीक्षा - गुण १००

वरील अभ्यासपत्रिकेचे प्रथम सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे -

प्रश्न १- नाट्य ('नाटक व एकांकिका') या साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न २ - 'आमदार सौभाग्यवती' या नाटकावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ३ - निवडक एकांकिकावर 'पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ४ - तिन्ही गटातील सहा टीपा विचाराव्यात किंवा लघुत्तरी प्रश्न विचारावेत विद्यार्थ्यांनी कोणतेही चार सोडवाव्यात - गुण ४०.

१) नाट्य ('नाटक व एकांकिका') या साहित्यप्रकाराचा सैद्धान्तिक परिचय

२) 'आमदार सौभाग्यवती'

३) निवडक एकांकिका

साध्ये (Outcome)

- १) नाटक आणि एकांकिका या प्रकारांचे बाष्प्यीन स्वरूप लक्षात येईल

UNIVERSITY OF MUMBAI



Revised Syllabus

(Choice Based Credit System, CBCS)

Sem. III & Sem. IV

Program: S.Y.B.A.

Course: Marathi -II

2017-18 to 2020-21


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Arts, Commerce & Science College
Mandangad, Dist. Ratnagiri.415203

2017-18
2018-19
2019-20
2020-21

SYBA - MAR - (II)
(To be implemented from 2017-2018)

SEM - 3

द्वितीय वर्ष कला मराठी सत्र तिसरे व चौथे (प्रत्येक सत्रात ३ श्रेयांकने)

द्वितीय वर्ष बी.ए. (मराठी) अभ्यासपत्रिका क्र. २ च्या अभ्यासक्रमात तिस-या सत्रात कादंबरी या साहित्याप्रकाराचा सैद्धांतिक परिचय व दोन कादंब-या यांचा समावेश आहे. चौथ्या सत्रात आत्मकथन या साहित्यप्रकाराची ठळक वैशिष्ट्ये व दोन आत्मकथने यांचा समावेश करण्यात आलेला आहे. या अभ्यासक्रमाची श्रेयांकन पद्धतीनुसार रचना करण्यात आली आहे. हा अभ्यासक्रम दोन सत्रात विभागला असून नेमलेल्या विशिष्ट तासिकांमध्ये तो शिकवला जाणे आवश्यक आहे.

सत्र ३ (तिसरे) - एकूण व्याख्याने ४५ - श्रेयांकने - ०३

घटक-१ कादंबरी: एक साहित्यप्रकार - परिचय (१५ तासिका) श्रेयांकन १
कादंबरी हा कथनात्मक साहित्यप्रकार त्या दृष्टीने त्याच्या घटकांची माहिती कथानक, निवेदन, व्यक्तिरेखा, भाषा, निवेदनाचे प्रकार, व्यक्तिरेखांचे प्रकार, कादंबरीची एकूण संरचना.

घटक- २ 'थॅक यू मिस्टर ग्लाड',- कादंबरी - अनिल बर्वे पॉप्युलर प्रकाशन (१५ तासिका) श्रेयांकन १

घटक - ३ 'दिवे गेलेले दिवस',- कादंबरी - रंगनाथ पठारे, शब्दालय प्रकाशन (१५ तासिका) श्रेयांकन १

सत्र -४ (चौथे) एकूण व्याख्याने ४५ - श्रेयांकने -३

घटक १: 'आत्मकथन' या साहित्यप्रकाराची ठळक वैशिष्ट्ये (१५ तासिका) श्रेयांकन- १

घटक २: 'मन में है विश्वास'- आत्मकथन - विश्वास नांगरे पाटील, राजहंस प्रकाशन, (१५ तासिका) श्रेयांकन १

घटक ३: 'जसं घडलं तसं' - आत्मकथन - नीलम माणगावे, शशिकिरण पब्लिकेशन, (१५ तासिका)- श्रेयांकन १


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UNIVERSITY OF MUMBAI



Revised Syllabus

(Choice Based Credit System, CBCS)

Sem. I & Sem. II

Program: F.Y.B.A.

Course: Marathi -I

2019-20 to 2021-22

R. G. M.

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Mandangad, Dist. Warananagar-415203

2019-20
2020-21
2021-22

FYBA – MAR – (ANC)

(To be implemented from 2019-20)

SEM – 1 (UMAR 101)

SEM – 2 (UMAR 201)

प्रथम वर्ष बी.ए. मराठी ऐच्छिक (प्रत्येक सत्रात ३ श्रेयांकने)

प्रथम वर्ष बी.ए. मराठी या ऐच्छिक या विषयासाठी २०१९-२०२० या शैक्षणिक वर्षापासून नेमलेला अभ्यासक्रम प्रथम वर्ष बी.ए. मराठी ऐच्छिक या अभ्यासक्रमात प्रथम सत्रात दोन नाटयकृती व दुसऱ्या सत्रात दोन प्रवासवर्णनांचा समावेश करण्यात आला आहे. या अभ्यासक्रमाची श्रेयांकन पद्धतीनुसार रचना करण्यात आली आहे. वरील अभ्यासक्रम दोन सत्रांत विभागलेला असून, नेमलेल्या विशिष्ट तासिकांमध्ये तो शिकवला जाणे आवश्यक आहे.

सत्र - पहिले - एकूण व्याख्याने - ४५, श्रेयांकने - ०३

घटक १ नाटक या साहित्यप्रकाराचा सैद्धान्तिक परिचय - (४८ मिनिटांच्या १५ तासिका)
श्रेयांकन - १

नाटक या साहित्यप्रकाराची संकल्पना, नाटक या साहित्य प्रकाराचे घटक, नाटकाचे महत्त्वाचे दोन प्रकार (शोकात्मिका व सुखात्मिका), नाटक एक समिश्र कला, मराठी नाटकाच्या इतिहासातील महत्त्वाचे टप्पे.

घटक २ सत्यशोधक : गो.मु. देशपांडे, लोकवाङ्मयगृह, मुंबई (४८ मिनिटांच्या १५ तासिका)
श्रेयांकन - १

घटक ३ सिगारेट : मनस्विनी लता रविंद्र, पॉप्युलर प्रकाशन, मुंबई. (४८ मिनिटांच्या १५ तासिका) श्रेयांकन - १

प्रथम सत्रान्त परीक्षा - गुण १००

वरील अभ्यासपत्रिकेचे प्रथम सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

प्रथम वर्ष बी.ए. मराठी (ऐच्छिक)

प्रश्न १ 'नाटक' या साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर पर्याय देऊन एक प्रश्न गुण २०

प्रश्न २ सत्यशोधक या नाटकावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ३ सिगारेट या नाटकावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ४ प्रत्येक गटातील एकेक टीप लिहा (अंतर्गत पर्यायांसह) - गुण ३०.

१) नाटकाचा सैद्धान्तिक परिचय


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१) अन्वयिक

१) घटके:

प्रश्न १: अध्यासपत्रिकेतील घटक २ व ३ वर आधारित वस्तुनिष्ठ प्रश्न प्रत्येक घटकावर ४ असे एकूण ८ वस्तुनिष्ठ स्वरूपाचे प्रश्न विचारले जातील परीक्षार्थीनी त्यापैकी कोणतेही ५ प्रश्न सोडवायचे आहेत प्रत्येक योग्य उत्तरास २ गुण असे एकूण गुण १०

४ व ५ वर - एकूण सावधाने ३५ श्रेणीकरणे - ०१

घटक १: प्रवासवर्णन वा साहित्यकाराचा तैद्धान्तिक परिचय (१५ श्रेणीकरणे) श्रेणीकरण - १
प्रवासवर्णन वा साहित्यकाराची संकल्पना प्रवासवर्णन वा साहित्य प्रकाराचे घटक वरती प्रवासवर्णनाचे प्रकार व साहित्य इतिहास

घटक २: तुलनात्मकदृष्ट्या दोन भौतिक शिकणे, शैक्षणिक प्रकाशन पुणे वा प्रवासवर्णनाचा अर्थ

घटक ३: नव आरंभ शैक्षणिक महावीर जोशी यांच्या प्रकाशन पुणे वा प्रवासवर्णनाचा अर्थ

दुसरी सहाय्य परीक्षा - गुण १००

दोन अध्यासपत्रिकेचे सहाय्य प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविल्यात आले आहे

सहाय्य शर्त वीर मराठी (ऐच्छिक)

प्रश्न १: प्रवासवर्णन वा साहित्यकाराचा तैद्धान्तिक परिचय (पर्याप्त) एक प्रश्न - गुण २०

प्रश्न २: घटक २ मधील प्रवासवर्णनावर आधारित सयसि देऊन एक प्रश्न - गुण २०

प्रश्न ३: घटक ३ मधील प्रवासवर्णनावर आधारित सयसि देऊन एक प्रश्न - गुण २०

प्रश्न ४: प्रत्येक घटकातील एकेक टोप लिहा - (अंतर्गत पर्याप्त) गुण ३०

१) प्रवासवर्णनाचा तैद्धान्तिक परिचय

२) घटक २ मधील प्रवासवर्णन

३) घटक ३ मधील प्रवासवर्णन

प्रश्न ५: अध्यासपत्रिकेतील घटक २ व ३ वर आधारित वस्तुनिष्ठ प्रश्न प्रत्येक घटकावर ४ असे एकूण ८ वस्तुनिष्ठ स्वरूपाचे प्रश्न विचारले जातील परीक्षार्थीनी त्यापैकी कोणतेही ५ प्रश्न सोडवायचे आहेत प्रत्येक योग्य उत्तरास २ गुण असे एकूण गुण १०


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Arts, Commerce & Science College
M...-...-... Dist. ... 'negitv' ... 2020

AC 26/2/2015

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UNIVERSITY OF MUMBAI



Revised Syllabus for F.Y.B.A.
Program: B.A.
Course: Marathi (Ancillary)
(Sem I & II)

(Credit Based Semester and Grading System with effect
from the Academic year 2015-2016)


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2016-2017
2017-2018
2018-2019

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Item No. 4.21

UNIVERSITY OF MUMBAI



Revised Syllabus for F.Y.B.A.
Program: B.A.
Course: Marathi (Ancillary)
(Sem I & II)

(Credit Based Semester and Grading System with effect
from the Academic year 2015-2016)

R. S. Munde
PRINCIPAL

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Arts, Commerce & Science College
Mandengad, Dist. Raichur, 415203

2016-2017
2017-2018
2018-2019

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२	वर्गातील उपस्थिती, मराठी वाङ्मय मंडळ तसेच यांसारख्या कार्यक्रमांत प्रत्यक्ष सहभाग.	२५
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प्रथम सत्रान्त परीक्षा - गुण ७५

वरील अभ्यासपत्रिकेचे सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

प्रथम वर्ष बी. ए. मराठी (ऐच्छिक)

पत्र १- 'नाटक' या साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर पर्याय देऊन एक प्रश्न - गुण १५.

पत्र २ - 'कावल्याची शाळा' या नाटकावर पर्याय देऊन एक प्रश्न - गुण १५.

पत्र ३ - 'राहिते दूर घर माझे' या नाटकावर पर्याय देऊन एक प्रश्न - गुण १५.

पत्र ४ - प्रत्येक गटातील एकेक टीप लिहा (अंतर्गत पर्यायांसह) - गुण १५.

१) नाटकाचा सैद्धान्तिक परिचय

२) 'कावल्याची शाळा'

३) 'राहिते दूर घर माझे'

पत्र ५. सर्व घटकांवर आधारित वस्तुनिष्ठ प्रश्न - गुण १५

सत्र दुसरे-एकूण व्याख्याने ४५, श्रेयांकने - ०३

घटकाकविता या साहित्यप्रकाराचा सैद्धान्तिक परिचय-(१५ तासिका) श्रेयांकन - १

(कवितेची व्याख्या,भावकविता आणि भावगीत फरक, कवितेची भाषा,परंपरेचा मागोवा)

घटक- २या घटकाच्या अंतर्गत चार कवींच्या कवितांचा अभ्यास नेमलेला आहे.

(१५ तासिका) श्रेयांकन - १

१) वा.सी. मर्डेकर-मर्डेकरांची कविता, बाळ सीताराम मर्डेकर, मौज प्रकाशन, मुंबई, १९९४

१ किलीतरी दिवसात ... (पृ. १०१)

२ पिपात मेले ओल्या उंदिर (पृ. ४१)

३ सकाळी उठोनी चहा-कोफी प्यायी (पृ. २८)

४ अजून येतो वास फुलांना (पृ. १०२)

२) मंगेश पाडगावकर-

१ दिवस तुझे हे फुलायाचे (संग्रह-तुझे गीत गाण्यासाठी, मौज प्रकाशन, मुंबई, १९८९, पृ. ८४)

२ मी फूल तृणातील इवले (संग्रह- जिप्सी, पॉप्युलर प्रकाशन, मुंबई, पुनर्मुद्रण, १९६८, पृ. १७)

३ रात्रभर आपण चालत आहोत (भटके पक्षी, मौज प्रकाशन, मुंबई, १९८४, पृ. ४९)

४ प्रेम म्हणजे प्रेम असतं (बोलगाणी, मौज प्रकाशन, मुंबई, २०००, पृ. ३६)

३) बहिणाबाई-संग्रह - बहिणाआची गाणी, बहिणावाआ चौधरी, परचुरे प्रकाशन, मुंबई, १९५२

१ संसार (पृ. ०७)


PRINCIPAL
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2018-20

University of Mumbai



**Bachelor of Commerce (B.Com)
Programme
Three Year Integrated Programme-
Six Semesters
Course Structure**

**Under Choice Based Credit, Grading and
Semester System**

**To be implemented from Academic Year- 2016-2017
Progressively**

Faculty of Commerce

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Mandargao, Dist. Mumbai. 415208

Sr. No.	Modules / Units
1	Environment and Ecosystem Environment: Meaning, definition, scope and its components; concept of an ecosystem : definition, Characteristics, components and types, functioning and structure; Food Chain and Food Web- Ecological Pyramids - Man and environment relationship; Importance and scope of Environmental Studies.
2	Natural Resources and Sustainable Development Meaning and definitions ; Classification and types of resources, factors influencing resource; Resource conservation- meaning and methods- I and non-conventional resources, problems associated with and management of water, forest and energy resources- resource utilization and sustainable development
3	Populations and Emerging Issues of Development Population explosion in the world and in India and arising concerns- Demographic Transition Theory - pattern of population growth in the world and in India and associated problems - Measures taken to control population growth in India; Human population and environment- Environment and Human Health – Human Development Index – The World Happiness Index
4	Urbanisation and Environment Concept of Urbanisation– Problems of migration and urban environment- changing landuse, crowding and stress on urban resources, degradation of air and water, loss of soil cover impact on biodiversity, Urban heat islands – Emerging Smart Cities and safe cities in India - Sustainable Cities
5	Reading of Thematic Maps and Map Filling Reading of Thematic Maps(4 Lectures) Located bars, Circles, Pie charts, Isopleths, Choropleth and Flow map, Pictograms - Only reading and interpretation. Map Filling: (4 Lectures) Map filling of World (Environmentally significant features) using point, line and polygon segment. Concept and Calculation of Ecological Footprint




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Faculty of Commerce

University of Mumbai



**Revised Syllabus
and
Question Paper Pattern
of Courses of
Bachelor of Commerce Programme
at
Third Year
Semester V and VI
Under Choice Based Credit, Grading and
Semester System**

To be implemented from Academic Year 2018-2019

Faculty of Commerce


PRINCIPAL

Leakage
Arts, Com
Mandant

Faculty of Commerce, University of Mumbai

1 | Page

Sr. No.	Modules / Units
1	Introduction to Marketing <ul style="list-style-type: none"> Marketing, Concept, Features, Importance, Functions, Evolution, Strategic v/s Traditional Marketing Marketing Research - Concept, Features, Process Marketing Information System-Concept, Components Data Mining- Concept, Importance Consumer Behaviour- Concept, Factors influencing Consumer Behaviour Market Segmentation- Concept, Benefits, Bases of market segmentation Customer Relationship Management- Concept, Techniques Market Targeting- Concept, Five patterns of Target market Selection
2	Marketing Decisions I <ul style="list-style-type: none"> Marketing Mix- Concept, Product- Product Decision Areas Product Life Cycle- Concept, Managing stages of PLC Branding- Concept, Components Brand Equity- Concept, Factors influencing Brand Equity Packaging- Concept, Essentials of a good package Product Positioning- Concept, Strategies of Product Positioning Service Positioning- Importance & Challenges Pricing- Concept, Objectives, Factors influencing Pricing, Pricing Strategies
3	Marketing Decisions <ul style="list-style-type: none"> Physical Distribution- Concept, Factors influencing Physical Distribution, Marketing Channels (Traditional & Contemporary Channels) Supply Chain Management-Concept, Components of SCM Promotion- Concept, Importance, Elements of Promotion mix Integrated Marketing Communication (IMC)- Concept, Scope, Importance Sales Management- Concept, Components, Emerging trends in selling Personal Selling- Concept, Process of personal selling, Skill Sets required for Effective Selling
4	Key Marketing Dimensions <ul style="list-style-type: none"> Marketing Ethics: Concept, Unethical practices in marketing, General role of consumer organizations Competitive Strategies for Market Leader, Market Challenger, Market Follower and Market Nicher Marketing Ethics: Rural Marketing- Concept, Features of Indian Rural Market, Strategies for Effective Rural Marketing Digital Marketing-Concept, trends in Digital Marketing Green Marketing- concept, importance Challenges faced by Marketing Managers in 21st Century Careers in Marketing – Skill sets required for effective marketing Factors contributing to Success of brands in India with suitable examples, Reasons for failure of brands in India with suitable examples.

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Sr. No.	Modules / Units
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1 Human Resource Management

- Human Resource Management – Concept, Functions, Importance, Traditional v/s Strategic Human Resource Management
- Human Resource Planning- Concept Steps in Human Resource Planning Job Analysis-Concept, Components, Job design- Concept, Techniques
- Recruitment- Concept, Sources of Recruitment Selection - Concept , process , Techniques of E,selection,

2 Human Resource Development

- Human Resource Development- Concept, functions Training- Concept, Process of identifying training and development needs, Methods of Training & Development (Apprenticeship, understudy, job rotation, vestibule training, case study, role playing, sensitivity training, In, basket, management games) Evaluating training effectiveness- Concept, Methods
- Performance Appraisal- Concept, Benefits, Limitations, Methods Potential Appraisal-Concept, Importance
- Career Planning- Concept, Importance Succession Planning- Concept, Need Mentoring- Concept, Importance Counseling- Concept, Techniques.

3 Human Relations

- Human Relations- Concept, Significance Leadership –Concept, Transactional & Transformational Leadership Motivation- Concept, Theories of Motivation,(Maslow’s Need Hierarchy Theory, Vroom’s Expectancy Theory, McGregor’s Theory X and Theory Y, Pink’s Theory of Motivation)
- Employees Morale- Concept, Factors affecting Morale, Measurement of Employees Morale Emotional Quotient and Spiritual Quotient- Concept, Factors affecting EQ & SQ
- Employee Grievance- Causes, Procedure for Grievance redressal Employee welfare measures and Healthy & Safety Measures.

4 Trends In Human Resource Management

- HR in changing environment: Competencies- concept, classification Learning organizations- Concept, Creating an innovative organization, Innovation culture- Concept, Need, Managerial role.
- Trends in Human Resource Management,: Employee Engagement- Concept, Types Human resource Information System (HRIS) – Concept, Importance, Changing patterns of employment.
- Challenges in Human Resource Management: Employee Empowerment, Workforce Diversity, Attrition, Downsizing, Employee Absenteeism, Work-life Balance, Sexual Harassment at work place, Domestic and International HR Practices, Millennial (Gen Y)Competency Mapping

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University of Mumbai



S.Y.B.Sc.
Paper - III
from 2019-20

No. UG/25 of 2019-20

CIRCULAR

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular No. UG/25 of 2019-20 dated 17th June, 2019 relating to the revised syllabus as per U.B.S. for the S.Y.B.Sc. Physics (Sem III & IV).

They are hereby informed that the recommendations made by the Board of Studies in Physics held on 8th April, 2019 have been accepted by the Academic Council meeting held on 12th April, 2019 vide item No. 4.36 and that in accordance therewith, the revised syllabus as per the U.B.S. for the S.Y.B.Sc. Physics Paper III in (Sem III & IV) has been issued and will be in effect from the academic year 2019-20 accordingly. (The same is available on the University website www.mu.ac.in)

MUMBAI-400 032
17th June, 2019

(Dr. Ajay Deshmukh)
REGISTRAR

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty (Circular No. UG/34 of 2017-18 dated 9th January, 2018)

A.C. 4.36 (5/04/2019)

No. UG/25 of 2019

MUMBAI-400 032

17th June, 2019

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Science & Technology,
- 2) The Chairman, Board of Studies in Physics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 5) The Director, Board of Students Development,
- 6) The Coordinator, University Computerization Centre,

(Dr. Ajay Deshmukh)
REGISTRAR

R.G.M.
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Mandangad, Dist. Ratnagiri-415203

- 2) Metallic crystal structures, relation between the density of crystal material and lattice constant in a cubic lattice, Directions, Planes, Miller Indices, Important planes in simple cubic structure, separation between lattice planes in a cubic crystal.

SOP : Chapter 4 : II,III,IV,V, VI, VII, XIV,XV, XVI, XVIII, XX, XXII, XXV, XXVI

Unit III: Properties of Material

15 Lectures

- 1) Electrical properties: Review of energy band diagram for materials - conductors, **semiconductors** and insulators, Electrical conductivity in metals, **semiconductors** and insulators (dielectrics), effect of temperature on conductivity.
- 2) Optical properties: Reflection, refraction, absorption and transmission of electromagnetic radiation in solids.
- 3) Magnetic properties: Origin of magnetism in solids (basic idea), Types of magnetic order (paramagnetism, diamagnetism, antiferromagnetism, ferromagnetism, ferrimagnetism),magnetic hysteresis.
- 4) **Applications: Dielectric materials: Piezoelectric, ferroelectric and pyroelectric materials.**

References:

1. Electronic Properties of Materials, Rolf E Hummel.
2. Materials Science and Engineering: A First Course by V. Raghavan.


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B.Sc. 2017-18

AC 11-02-2017
Item No. 4.222

UNIVERSITY OF MUMBAI
Essential Elements of the Syllabus

Title : Syllabus for the B.Sc. Course in Physics (from academic year 2017-18) for Semester III & IV

Course Code : USPH

Preamble :

This is a revised part of the undergraduate programme (Six Semesters) in Physics, to be taught in Semester III & IV from the academic year 2017-18 onwards.

Developing Curriculum that is progressive and purposeful to create positive improvement in the education system is the logic behind this revision.

Out of the three courses in each Semester, **two** courses are devoted to core Physics, catering to Mechanics, Thermodynamics, Optics , Electrodynamics, Quantum Mechanics, Mathematical Physics and Digital and Analog Electronics. These have been tailored to fit in with the existing FYBSc syllabus (Sem I and Sem II) in terms of continuity and to ensure delivery of quality content to the learner.

The science of Physics has diversified immensely in recent times and numerous new fields in Physics, such as Biophysics, Geo-Physics, Radio-Physics, Physics of metals and materials, etc. have come into existence. The fundamentals and the generality of many principles of Physics are common to all these specialized diverse fields. Most problems in applied areas have been discussed



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Applied physics : Physics Paper-III

Paper III - 2

Unit II : Biophysics

15 Lectures

Introduction, definition, History & scope of biophysics, biological fluids, physico-chemical properties, viscosity, surface tension, pH, osmosis, osmotic pressure. Diffusion, Ficks' laws of diffusion, dialysis, Cell is unit of life, fundamental understanding prokaryotic and eukaryotic cell structure and function, eukaryotic cell membrane, Fundamentals of transport process through biological membrane, membrane channels. electrical properties of cell, Action potential, propagation of action potential, methods of measurement of action potential, Nernst equation, Goldman equation, The Hodgkin-Huxely model of action potential, voltage clamp technique, Patch clamp technique, cell impedance and capacitance .

References:

1. Cellular and Molecular Biology: Concept and Experiment by Gerald Karp
2. The Cell: A Molecular Approach by Geoffery Cooper
3. Introductory Biophysics: Perspective on living state by James Claycomb
4. Medical Physiology by Guyton
5. Molecular Biology of Cell by Bruce Albert
6. Text Book of Biophysics by R N Roy

Unit III : Materials – properties and applications

15 Lectures

Introduction to Materials

Classification of Materials based on structures (Crystalline and Amorphous, single crystal, polycrystalline and nanomaterials) and Functionality (Conducting, insulating, superconducting, reflecting, transmitting etc)

Types of Materials: Metals and alloys, Ceramics, Polymers and Composites, Thin Films, Nanomaterials; Some Physical and Chemical methods of materials synthesis (5L)

Properties of materials

Electrical Properties: Review of energy band diagram for materials - conductors, semiconductors and insulators, Electrical conductivity in metals, semiconductors and insulators (dielectrics), effect of temperature on conductivity


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Optical Properties: Reflection, refraction, absorption and transmission of electromagnetic radiation in solids.

Magnetic Properties: Origin of magnetism in solids (basic idea), Types of magnetic order (paramagnetism, diamagnetism, antiferro magnetism, ferromagnetism, ferrimagnetism), magnetic hysteresis (6L)

Applications

Optical materials: LEDs, OLEDs, LCDs, Flat Panel Displays, optical fibers

Dielectric materials: Piezoelectric, ferroelectric and pyroelectric materials

Magnetic Materials: Soft magnets (Transformer steels), Hard magnets for permanent magnets, Magnetic Recording and Storage (4L)

References:

1. Electronic Properties of Materials, Rolf E Hummel
2. Materials Science and Engineering: A First Course by V. Raghavan

USPHP3: Practical course -3

Instructions:

- i) All the measurements and readings should be written with proper units in SI system only.
- ii) After completing all the required number of experiments in the semester and recording them in journal, student will have to get their journal certified and produce the certified journal at the time of practical examination.
- iii) While evaluating practical, weight age should be given to circuit/ray diagram, observations, tabular representation, experimental skills and procedure, graph, calculation and result.
- iv) Skill of doing the experiment and understanding physics concepts should be more important than the accuracy of final result.


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F.Y.B.Sc. 2016-17

1/10/17
F.Y.B.Sc.
B.Sc.

UNIVERSITY OF MUMBAI



Syllabus for Sem I & II
Program: B.Sc.
Course: Physics

(Credit Based Semester and Grading
System for Academic year 2016-17)

B. J. Munde

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SEMESTER II

Name of the Programme	Duration	Semester	Subject
B.Sc. in Physics	Six semesters	II	Physics
Course code	Title	Credits	
USPHP2	Practical II	2	

Learning Outcome

- (i) To understand and practice the skills while doing physics practical.
- (ii) To understand the use of apparatus and their use without fear.
- (iii) To correlate their physics theory concepts through practical.
- (iv) Understand the concepts of errors and their estimation.


A) Regular experiments:

1	Flywheel
2	To study Zener Diode as Regulator
3	To study load regulation of a Bridge Rectifier
4	LR Circuit: To determine the value of given inductance and phase angle
5	CR Circuit: To determine value of given capacitor and Phase angle
6	Frequency of AC Mains: To determine frequency of AC mains.
7	LCR series Resonance: To determine resonance frequency of LCR series circuit.
8	To study NAND and NOR gates as Universal Building Blocks
9	To study EX-OR Gate, half adder and full adder and verify their truth tables.
10	To verify De Morgan's Theorems
11	Thevenin's Theorem: To verify Thevenin's theorem for DC circuits
12	Norton's Theorem: To verify Norton's Theorem for DC circuits
13	LDR Characteristics: To study the dependence of LDR resistance on intensity of light.

B) List of Demo-experiments: (Min. four)

1	Angular Momentum conservation (Rotating Platform)
2	Light dependent switch
3	Laser beam divergence, Intensity
4	Use of Oscilloscope
5	Charging and discharging of a capacitor

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Syllabus for the S.Y.B.Sc. Program: B.Sc. Course : BOTANY

*New
2015*

AC 26/2/2015
Item No. 4.33

UNIVERSITY OF MUMBAI



Syllabus for the **S.Y.B.Sc.**
Program: **B.Sc.**
Course : **BOTANY**

(Credit Based Semester and Grading System with
effect from the academic year **2015-2016**)

1

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Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

S.Y.B.Sc. Botany Syllabus
Restructured for Credit Based and Grading System
To be implemented from the Academic year 2015-2016

SEMESTER III

Course Code	UNIT	TOPICS	Credits	L / Week
USBO301	<u>PLANT DIVERSITY II</u>			
	I	Thallophyta- Algae	2	1
	II	Bryophyta		1
	III	Angiosperms		1
USBO302	<u>FORM AND FUNCTION II</u>			
	I	Instrumentation and Techniques	2	1
	II	Cell Biology		1
	III	Cytogenetics		1
USBO303	<u>CURRENT TRENDS IN PLANT SCIENCES I</u>			
	I	Pharmacognosy & Phytochemistry	2	1
	II	Forestry & Economic Botany		1
	III	Molecular Biology		1
USBOP3	Practical based on all the three courses in theory		3	9


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SEMESTER IV

Course Code	UNIT	TOPICS	Credits	L / Week
USBO401	PLANT DIVERSITY II		2	1
	I	Thallophyta: Fungi, Plant Pathology and Lichens		
	II	Pteridophyta and Paleobotany		
	III	Gymnosperms		
USBO402	FORM AND FUNCTION II		2	1
	I	Anatomy		
	II	Physiology and Plant Biochemistry		
	III	Ecology and Environmental Botany		
USBO403	CURRENT TRENDS IN BOTANY I		2	1
	I	Horticulture		
	II	Biotechnology		
	III	Biostatistics & Bioinformatics		
USBOP4	Practical based on all the three courses in theory		3	9


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Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

**SEMESTER III
THEORY**

Course Code	Title	Credits
USBO301	PLANT DIVERSITY II	2 Credits (45 lectures)
<p>Unit I: Thallophyta- Algae</p> <ul style="list-style-type: none"> • General Characters of Division Phaeophyta: Distribution, Cell structure, pigments, reserve food, range of thallus, reproduction: asexual and sexual, Alternation of Generations, Economic Importance. • Structure, life cycle and systematic position of <i>Dictyota</i> <i>Sargassum</i> • Pigments in Algae. 		15 Lectures
<p>Unit II: Bryophyta</p> <ul style="list-style-type: none"> • General Account of Class Anthocerotae and Musci • Structure, life cycle and systematic position of <ul style="list-style-type: none"> ○ <i>Anthoceros</i> ○ <i>Funaria</i> 		15 Lectures
<p>Unit III: Angiosperms Morphology of Flowering Plants</p> <ul style="list-style-type: none"> • Flower Morphology : <ul style="list-style-type: none"> ○ Parts of a flower, flower symmetry; ○ Flower as a modified shoot, ○ Thalamus, insertion of floral leaves on the thalamus ○ The accessory whorls : Calyx types and modifications, Corolla – forms; Aestivation, The Perianth; ○ The Essential whorls: Androecium parts of the androecium, Number and insertion of stamens, Union of stamens; Types of CoronaGynoecium: the carpel, style and stigma; Union of Carpel; ovary- placentation, types of ovules, evolution of placenta in Angiosperm. ○ Floral formula, floral diagram. • With the help of Bentham and Hooker's system of classification for flowering plants study the vegetative, floral characters and economic importance of the following families: <ul style="list-style-type: none"> ○ Magnoliaceae ○ Myrtaceae ○ Asteraceae ○ Apocynaceae ○ Amaranthaceae ○ Palmae 		15 Lectures



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Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Course Code	Title	Credits
USBO303	CURRENT TRENDS IN PLANT SCIENCES I	2 Credits (45 lectures)
Unit I : Pharmacognosy and Phytochemistry		
<ul style="list-style-type: none"> • Introduction to pharmacopoeia • Study of secondary metabolites (sources, properties and uses) with reference to <ul style="list-style-type: none"> ○ Alkaloids, ○ Glycosides, ○ Tannins, ○ Volatile oils and ○ Gums and resins (example of one plant for each category) 		15 Lectures
Unit II : Forestry and Economic Botany		
<ul style="list-style-type: none"> • Types of forests – classification of forests, different types of forests in India • Applications of forestry- Social forestry, Reforestation, Aforestation, Deforestation. • Economic Botany: <ul style="list-style-type: none"> ○ Fibres: Types of fibres, fibre yielding plants ○ Paper: Types of paper, paper yielding plants, paper processing. ○ Spices and condiments: Nutmeg, Mace, Clove, Cardamom and Saffron 		15 Lectures
Unit III : Molecular Biology		
<ul style="list-style-type: none"> • DNA replication : Replication(prokaryotic and eukaryotic) • Protein Synthesis: <ul style="list-style-type: none"> ○ Central dogma of Protein synthesis ○ Transcription: The transcription process in prokaryotes and eukaryotes, RNA synthesis, RNA processing, Adenylation& Capping. 		15 Lectures

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Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER III
PRACTICAL

Semester III USBOP3 PRACTICAL Paper I – Plant Diversity II		Cr I
Algae		
1. Study of stages in the life cycle of <i>Dictyota</i> from fresh/ preserved material and permanent slides.		
2. Study of stages in the life cycle of <i>Sargassum</i> from fresh/ preserved material and permanent slides.		
3. Economic importance and range of thallus in Phaeophyta		
Bryophyta		
4. Study of stages in the life cycle of <i>Anthoceros</i> from fresh/ preserved material and permanent slides.		
5. Study of stages in the life cycle of <i>Funaria</i> from fresh/ preserved material and permanent slides.		
Angiosperms		
6. Study of Floral Morphology		
7- Study of one plant from each family prescribed for theory: morphological		
9. peculiarities and economic importance of the members of these families.		


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UNIVERSITY OF MUMBAI
No. UG/153 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Sc. degree course, vide this office Circular No. UG/127 of 2011, dated 13th June, 2011 and the Principals of affiliated Colleges in Science are hereby informed that the proposal of the concern Chairperson of Ad-hoc Board of Studies in Botany approved by the Academic Council at its meeting held on 14th July, 2016 vide item No. 4.1 and that in accordance therewith, the revised paper pattern as per Choice Based Credit System for New Scheme of Examination (Theory Paper) Pattern of F.Y.B.Sc. (Botany) (Sem. I & II), which are available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI - 400 032
16 November, 2016


(Dr.M.A.Khan)
REGISTRAR

To,

The Principals of the affiliated Colleges in Science.

A.C/4.1/14.07.2016

No. UG/153A of 2016

MUMBAI-400 032

16 November, 2016

Copy forwarded with Compliments for information to:-

- 1) The Co-ordinator, Faculties of Science,
- 2) The Chairman, Board of Studies in Botany,
- 3) The Professor-cum-Director, Institute of Distance & Open Learning (IDOL)
- 4) The Director, Board of College and University Development,
- 5) The Co-Ordinator, University Computerization Centre,
- 6) The Controller of Examinations.


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(Dr.M.A.Khan)
REGISTRAR

PTO..

University of Mumbai
Board of Studies in Botany
FYBSc Syllabus Credit System 2014-2015 onwards

AC 7/4/2014
Item No. 4.23

Semester I - USBO101		L	Cr
Paper I -- Plant Diversity I		45	2
UNIT I		15	
ALGAE			
1	Structure, life cycle and systematic position of <i>Nostoc</i> and <i>Spirogyra</i> .		
2	Economic importance of Algae.		
UNIT II		15	
FUNGI			
1	Structure, life cycle and systematic position of <i>Rhizopus</i> and <i>Aspergillus</i>		
2	Economic importance of Fungi.		
3	Modes of nutrition in Fungi (Saprophytism and Parasitism).		
UNIT III		15	
BRYOPHYTA			
1	General characters of Hepaticae		
2	Structure, life cycle and systematic position of <i>Riccia</i> .		


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University of Mumbai
Board of Studies in Botany
FYBSc Syllabus Credit System 2014-2015 onwards

AC 7/4/2014
Item No. 4.23

Semester II USBO201		Hrs	Cr
Paper I -- Plant Diversity I		45	2
UNIT I		15	
PTERIDOPHYTES			
1	Structure life cycle, systematic position and alternation of generations in <i>Nephrolepis</i>		
2	Stelar evolution		
UNIT II		15	
GYMNOSPERMS			
2	Structure life cycle systematic position and alternation of generations in <i>Cycas</i>		
3	Economic importance of Gymnosperms		
Unit III			
ANGIOSPERMS		15	
1.	Leaf: simple leaf, types of compound leaves, Incisions of leaf, venation, phyllotaxy, types of stipules, leaf apex, leaf margin, leaf base, leaf shapes. Modifications of leaf: spine, tendril, hooks, phyllode, pitcher, <i>Drosera</i> or insectivorous plants.		
2	Inflorescence: Racemose: simple raceme, spike, catkin, spadix, panicle. Cymose: monochasial, dichasial, polychasial. Compound: corymb, umbel, cyathium, capitulum, verticillaster, hypanthodium.		
3	Study of following families: Malvaceae, Amaryllidaceae.		

Semester II USBO202		Hrs	Cr
Paper II - Form and Function I		45	2
UNIT I		15	
ANATOMY			
1	Simple tissues, complex tissues.		
2	Primary structure of dicot and monocot root, stem and leaf.		
3	Epidermal tissue system: types of hair, monocot and dicot stomata.		

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University of Mumbai
Board of Studies in Botany
FYBSc Syllabus Credit System 2014-2015 onwards

AC 7/4/2014
Item No. 4.23

DISTRIBUTION OF TOPICS AND CREDITS
F Y B Sc. BOTANY SEMESTER I

Course	Nomenclature	Credits	Topics
USBO1O1	PLANT DIVERSITY I	02	1. Algae
			2. Fungi
			3. Bryophyta
USBO1O2	FORM AND FUNCTION I	02	1. Cell Biology
			2. Ecology
			3. Genetics
USBOP1	Plant Diversity I, form and Function I (Practical I & II)	02	

F Y B Sc BOTANY SEMESTER II

Course	Nomenclature	Credits	Topics
USBO2O1	PLANT DIVERSITY I	02	1. Pteridophytes
			2. Gymnosperms
			3. Angiosperms
USBO2O2	FORM AND FUNCTION I	02	1. Anatomy
			2. Physiology
			3. Medicinal Botany
USBOP2	Plant Diversity I, Form and Function I (Practical I & II)	02	


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UNIVERSITY OF MUMBAI
No. UG/110 of 2017-18

CIRCULAR:-

The Principals of the affiliated Colleges in Science and the Directors of recognized Science Institutions concerned are hereby informed that in continuation syllabi relating to Bachelor of Science degree Course (S.Y.B.Sc) passed by the Academic Council at its meeting held on 26/2/2015, vide item No. 4.33 and proposal received from Chairperson, Board of Studies in Botany has been accepted by the Academic Council at its meeting held on 11th May, 2017 vide item no. 4.214 and that in accordance therewith, the revised syllabus as per the (CBCS) for S.Y.B.Sc Paper - II (Sem - III) Programme in the Course of Botany, which is available on the University's website (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2017-18.

MUMBAI - 400 032
27th July, 2017


REGISTRAR

To,

The Principals of the affiliated Colleges in Science and the Directors of Recognized Institutions concerned.

A.C/4.214/11.05.2017

No. UG/110 -A of 2017

MUMBAI-400 032

27th July, 2017

Copy forwarded with compliments for information to :-

- 1) The Co-ordinator, Faculty of Science,
- 2) The Offg. Director, Board of Examinations and Evaluation,
- 3) The Chairperson, Board of Studies in Botany,
- 4) The Director of Board of Studies Development,
- 5) The Professor-cum-Director, Institute of Distance and Open Learning,
- 6) The Co-Ordinator, University Computerization Centre.


REGISTRAR


PRINCIPAL

Loke Gopinathji Munde
Arts, Commerce & Science College
Mandargao, W. M. B. Road, Mandargao, Mumbai - 400 032

...PTO

Syllabus for the S.Y.B.Sc. Program: B.Sc. Course: BOTANY

SEMESTER III
THEORY

Course Code	Title	Credits
USBO301	PLANT DIVERSITY	2 Credits (45 lectures)
Unit I: Thallophyta (Algae) & Bryophyta <ul style="list-style-type: none"> • General Characters of Division Phaeophyta: Distribution, Cell structure, range of thallus, Economic Importance. • Structure, life cycle and systematic position of <i>Sargassum</i> • General Account of Class Anthocerotae and Musci • Structure, life cycle and systematic position of <ul style="list-style-type: none"> ○ <i>Anthoceros</i> ○ <i>Funaria</i> 		15 Lectures
Unit II: Angiosperms Systematics: Objectives and Goals of Plant systematic <ul style="list-style-type: none"> • Plant Nomenclature • Taxonomy in relation to <ul style="list-style-type: none"> Anatomy Palynology Chemical constituents Embryology Cytology Ecology ○ With the help of Bentham and Hooker's system of Classification for flowering plants study the vegetative, floral characters and economic importance of the following families: <ul style="list-style-type: none"> ○ Leguminosae ○ Asteraceae ○ Amaranthaceae ○ Palmae 		15 Lectures
Unit III: Modern Techniques to Study Plant Diversity Preservation methods :Dry and Wet method <ul style="list-style-type: none"> • Microscopy – Principle and working of Light, and electron microscope. • Chromatography- Principles and techniques in paper and thin layer chromatography. • Principles and techniques of Horizontal and Vertical electrophoresis 		15 Lectures

PRINCIPAL
 Loknate Gopinathii Munde
 Adr. ... College
 Mandangad, Dist. Ratnagiri. 415203

Syllabus for the S.Y.B.Sc. Program: B.Sc. Course: BOTANY

SEMESTER IV
THEORY

Course Code	Title	Credits
USBO401	PLANT DIVERSITY	2 Credits (45 lectures)
Unit I: <u>Thallophyta: Fungi, Plant Pathology and Lichens Fungi</u> <ul style="list-style-type: none"> • General characters of Ascomycetae • Structure, life cycle and systematic position of <i>Erysiphe</i> and <i>Xylaria</i> • Plant Pathology- Symptoms, causative organism, disease cycle and control measures of o Powdery mildew and Late blight of potato • Lichens- Classification, Structure, Method of Reproduction, Economic Importance and Ecological Significance of Lichens. 		15 Lectures
Unit II: <u>Pteridophyta and Paleobotany Pteridophyta-</u> <ul style="list-style-type: none"> • Salient features and classification upto orders (with examples of each) of Psilophyta and Lepidophyta (G M Smith's system of classification to be followed) • Structure, life cycle and systematic position of <i>Selaginella</i> • Paleobotany- The geological time scale; Formation and types of fossils; Structure and systematic position of form genus <i>Rhynia</i> 		15 Lectures
Unit III: <u>Gymnosperms</u> <ul style="list-style-type: none"> • Salient features, classification up to orders (with examples of each) and economic importance of <u>Coniferophyta</u> (Chamberlain's system of classification to be followed) • Structure life cycle and systematic position of <i>Pinus</i> • Structure and systematic position of the form genus <i>Cordaites</i> 		15 Lectures

Rfm

PRINCIPAL

Loknath Gopinath Munde
Arts, Commerce & Science College
Manjunge, Dist. Ratnagiri-413203

PROPOSED SYBSC SYLLABUS FOR ACADEMIC YEAR 2017-18

Course Code	Title	Credits
USBO303	CURRENT TRENDS IN PLANT SCIENCES I	2 Credits (45 lectures)
	Unit 1: Pharmacognosy and phytochemistry <ul style="list-style-type: none"> • Introduction to pharmacopoeia • Indian pharmacopoeia, Indian Herbal Pharmacopoeia and Ayurvedic Pharmacopoeia • Study of Monograph from pharmacopoeia • Secondary Metabolites: Sources, properties, uses and adulterants, regional and seasonal variations • Adulterants: <i>Saraca asoca</i>, <i>Polyalthia longifolia</i>, <i>Terminalia arjuna</i>, <i>Terminalia tomentosa</i>, <i>Bacopa monnieri</i>, <i>Centella asiatica</i>, <i>Abrus</i>, <i>Glycyrrhiza</i>, <i>Phyllanthus amarus</i> (<i>Bhuiamla</i>) 	15 Lectures
	Unit 2: Forestry and Economic Botany <ul style="list-style-type: none"> • Forestry: Outline of types of forest in India • Forestry: Agro-forestry, Urban forestry, organic farming, Silviculture • Economic Botany: • Types of fibers: Jute and cotton, • Current trends in Fiber industries • Spices and condiments: Saffron and cardamom • Commercial market of spices 	15 Lectures
	Unit 3: Industry based on plant products <ul style="list-style-type: none"> • Aromatherapy- Introduction, Uses with few examples. Jojoba, lemon, jasmin • Botanical and nutraceuticals -<i>Spirulina</i>, <i>Vanillin</i>, <i>Garcinia indica</i>/<i>Garcinia cambogia</i>, <i>Chlorella</i>, and <i>Kale</i>. • Enzymes industry: Cellulases, Papain, Bromelain • Biofuels. 	15 Lectures



PRINCIPAL

Loknath Gopinathji Munde
Arts, Commerce & Science College
Mandangad, Dist. Ratnagiri.415203

Syllabus for the S.Y.B.Sc. Program: B.Sc. Course: BOTANY

SEMESTER IV
THEORY

Course Code	Title	Credits
USBO401	PLANT DIVERSITY	2 Credits (45 lectures)
Unit I: Thallophyta: Fungi, Plant Pathology and Lichens Fungi <ul style="list-style-type: none"> • General characters of Ascomycetae • Structure, life cycle and systematic position of <i>Erysiphe</i> and <i>Xylaria</i> • Plant Pathology- Symptoms, causative organism, disease cycle and control measures of o Powdery mildew and Late blight of potato • Lichens- Classification, Structure, Method of Reproduction, Economic importance and Ecological Significance of Lichens. 		15 Lectures
Unit II: Pteridophyta and Paleobotany Pteridophyta- <ul style="list-style-type: none"> • Salient features and classification upto orders (with examples of each) of Psilophyta and Lepidophyta (G M Smith's system of classification to be followed) • Structure, life cycle and systematic position of <i>Selaginella</i> • Paleobotany- The geological time scale; Formation and types of fossils; Structure and systematic position of form genus <i>Rhynia</i> 		15 Lectures
Unit III: Gymnosperms <ul style="list-style-type: none"> • Salient features, classification up to orders (with examples of each) and economic importance of Coniferophyta (Chamberlain's system of classification to be followed) • Structure life cycle and systematic position of <i>Pinus</i> • Structure and systematic position of the form genus <i>Cordaites</i> 		15 Lectures



PRINCIPAL

Lokneta Gorinathji Munde
Arts, Commerce & Science College
Mandargao, Dist. Raichur, Karnataka 57593

Course Code	Title	Credits
USBO403	CURRENT TRENDS IN PLANT SCIENCES I	2 Credits (45 lectures)
	<p>Unit I: Horticulture and Gardening Introduction to Horticulture: Branches of Horticulture Gardening:</p> <ul style="list-style-type: none"> • Locations in the garden- edges, hedges, lawn, flower beds, avenue, water garden (with names of two plants for each category). Focal point. • Types of garden <ul style="list-style-type: none"> ○ Formal and informal gardens ○ National Park: Sanjay Gandhi National Park. ○ Botanical Garden: Veer Mata Jijabai Udyan (Victoria Garden). 	15 Lectures
	<p>Unit II : Biotechnology</p> <ul style="list-style-type: none"> • Introduction to plant tissue culture <ul style="list-style-type: none"> ○ Laboratory organization and techniques in plant tissue culture ○ Totipotency ○ Organogenesis ○ Organ culture – root cultures, meristem cultures, anther and pollen culture, embryo culture. • R-DNA technology- <ul style="list-style-type: none"> ○ Gene cloning ○ Enzymes involved in Gene cloning ○ Vectors used for Gene cloning. 	15 Lectures
	<p>Unit III : Biostatistics and Bioinformatics</p> <ul style="list-style-type: none"> • Biostatistics: <ul style="list-style-type: none"> ○ The chi square test. ○ Correlation – Calculation of coefficient of correlation. • Bioinformatics ○ Information technology: History and tools of IT, Internet and its uses. 	15 Lectures

R. G. M.
PRINCIPAL
 Lokneta Gopinath Munde
 Arts, Commerce & Science College
 Mandargol, Dist. Solapur, Maharashtra-431529

Syllabus for the S.Y.B.Sc. Program: B.Sc. Course: BOTANY

SEMESTER III
THEORY

Course Code	Title	Credits
USBO301	PLANT DIVERSITY	2 Credits (45 lectures)
Unit I: Thallophyta (Algae) & Bryophyta <ul style="list-style-type: none"> • General Characters of Division Phaeophyta: Distribution, Cell structure, range of thallus, Economic Importance. • Structure, life cycle and systematic position of <i>Sargassum</i> • General Account of Class Anthocerotae and Musci • Structure, life cycle and systematic position of <ul style="list-style-type: none"> ◦ <i>Anthoceros</i> ◦ <i>Funaria</i> 		15 Lectures
Unit II: Angiosperms Systematics: Objectives and Goals of Plant systematic <ul style="list-style-type: none"> • Plant Nomenclature • Taxonomy in relation to <ul style="list-style-type: none"> Anatomy Palynology Chemical constituents Embryology Cytology Ecology ◦ With the help of Bentham and Hooker's system of Classification for flowering plants study the vegetative, floral characters and economic importance of the following families: <ul style="list-style-type: none"> ◦ Leguminosae ◦ Asteraceae ◦ Amaranthaceae ◦ Palmae 		15 Lectures
Unit III: Modern Techniques to Study Plant Diversity Preservation methods: Dry and Wet method <ul style="list-style-type: none"> • Microscopy – Principle and working of Light, and electron microscope. • Chromatography- Principles and techniques in paper and thin layer chromatography. • Principles and techniques of Horizontal and Vertical electrophoresis. 		15 Lectures



PRINCIPAL

Lokneta Gopinathji Munde
 Art & Commerce College
 Mandli, Tal. Kumbharwadi, Dist. Solapur-431003

PROPOSED SYBSC SYLLABUS FOR ACADEMIC YEAR 2017-18

Course Code	Title	Credits
USBO303	CURRENT TRENDS IN PLANT SCIENCES I	2 Credits (45 lectures)
	Unit 1: Pharmacognosy and phytochemistry <ul style="list-style-type: none"> • Introduction to pharmacopoeia • Indian pharmacopoeia, Indian Herbal Pharmacopoeia and Ayurvedic Pharmacopoeia • Study of Monograph from pharmacopoeia • Secondary Metabolites: Sources, properties, uses and adulterants, regional and seasonal variations • Adulterants: <i>Saraca asoca</i>, <i>Polyalthia longifolia</i>, <i>Terminalia arjuna</i>, <i>Terminalia tomentosa</i>, <i>Bacopa monnieri</i>, <i>Centella asiatica</i>, <i>Abrus</i>, <i>Glycyrrhiza</i>, <i>Phyllanthus amarus</i> (<i>Bhuiamla</i>) 	15 Lectures
	Unit 2: Forestry and Economic Botany <ul style="list-style-type: none"> • Forestry: Outline of types of forest in India • Forestry: Agro-forestry, Urban forestry, organic farming, Silviculture • Economic Botany: <ul style="list-style-type: none"> • Types of fibers: Jute and cotton, • Current trends in Fiber industries • Spices and condiments: Saffron and cardamom • Commercial market of spices 	15 Lectures
	Unit 3: Industry based on plant products <ul style="list-style-type: none"> • Aromatherapy- Introduction, Uses with few examples. Jojoba, lemon, jasmin • Botanical and nutraceuticals -<i>Spirulina</i>, <i>Vanillin</i>, <i>Garcinia indica</i>/<i>Garcinia cambogia</i>, <i>Chlorella</i>, and <i>Kale</i>. • Enzymes industry: Cellulases, Papain, Bromelain • Biofuels. 	15 Lectures

Bfm

PRINCIPAL
Loknath Gopinathji Munde
Arts, Commerce & Science College
Mandargad, Dist. Ratnagiri, 415203

Semester III USBOP3		Cr I
PRACTICAL - Paper III CURRENT TRENDS IN PLANT SCIENCES I		
1	Study of <i>Phyllanthus amarus</i> <i>Saraca asoka</i> <i>Bacopa monieri</i>	
2	<u>Study of biodiversity</u> (Visit to National Park/ Botanical Garden) Sources of : Fibres & Paper Spices & condiments <u>Preparation of herbal cosmetics (Face pack/ De-tanning cream)</u>	
3	Estimation of crude fibre in cereals & their products	
4	Preparation & evaluation of probiotic foods	
5	Evaluation of nutraceutical value of mushroom/ wheat germ	


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 Loknath Gopinathji Munde
 Arts, Science & Commerce College
 Mandarghat, Dist. P. Tal. Pin 415203

Course Code	Title	Credits
USBO403	CURRENT TRENDS IN PLANT SCIENCES I	2 Credits (45 lectures)
Unit I : Horticulture and Gardening Introduction to Horticulture: Branches of Horticulture Gardening: <ul style="list-style-type: none"> • Locations in the garden- edges, hedges, lawn, flower beds, avenue, water garden (with names of two plants for each category). Focal point. • Types of garden <ul style="list-style-type: none"> ○ Formal and informal gardens ○ National Park: Sanjay Gandhi National Park. ○ Botanical Garden: Veer Mata Jijabai Udyan (Victoria Garden). 		15 Lectures
Unit II : Biotechnology <ul style="list-style-type: none"> • Introduction to plant tissue culture <ul style="list-style-type: none"> ○ Laboratory organization and techniques in plant tissue culture ○ Totipotency ○ Organogenesis ○ Organ culture – root cultures, meristem cultures, anther and pollen culture, embryo culture. • R-DNA technology- <ul style="list-style-type: none"> ○ Gene cloning ○ Enzymes involved in Gene cloning ○ Vectors used for Gene cloning. 		15 Lectures
Unit III : Biostatistics and Bioinformatics <ul style="list-style-type: none"> • Biostatistics: <ul style="list-style-type: none"> ○ The chi square test. ○ Correlation – Calculation of coefficient of correlation. • Bioinformatics ○ Information technology: History and tools of IT, Internet and its uses. 		15 Lectures


PRINCIPAL
 Loknete Gopinathji Munde
 Arts, Commerce & Science College
 Mandli, Dist. Solapur

UNIVERSITY OF MUMBAI
No. UG/118 of 2017-18

CIRCULAR

The Principals of the affiliated Colleges in Science and the Directors of recognized Science Institutions concerned are hereby informed that in continuation of syllabi relating to Bachelor of Science degree Course (S.Y.B.Sc) passed by the Academic Council at its meeting held on 26/2/2015, vide item No. 433 and proposal received from Chairperson, Board of Studies in Botany has been accepted by the Academic Council at its meeting held on 11th May, 2017 vide item no. 4214 and that in accordance therewith, the revised syllabus as per the (CBCS) for S.Y.B.Sc-Paper - II (Sem - III) Programme in the Course of Botany, which is available on the University's website (www.uom.ac.in) and that the same has been brought into force with effect from the academic year 2017-18.

MUMBAI - 400 032
27th July, 2017

[Signature]
REGISTRAR

To,

The Principals of the affiliated Colleges in Science and the Directors of Recognized Institutions concerned.

A.C/4214/11.05.2017

No. UG/118 -A of 2017

MUMBAI-400 032

27th July, 2017

Copy forwarded with compliments for information to :-

- 1) The Co-ordinator, Faculty of Science,
- 2) The Offg. Director, Board of Examinations and Evaluation,
- 3) The Chairperson, Board of Studies in Botany,
- 4) The Director of Board of Studies Development,
- 5) The Professor-cum-Director, Institute of Distance and Open Learning.
- 6) The Co-Ordinator, University Computerization Centre.

[Signature]
REGISTRAR

[Signature] PTO
PRINCIPAL
Loknete Gopinathji Munde
Ariz, Commerce & Science College
Mandargao, Dist. Ratnagiri-415203

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Course Code	SEM III- Title	Credits
USBO302	FORM AND FUNCTION II	2 Credits (45 lectures)
Unit II : Cell Biology		
<ul style="list-style-type: none"> • Ultra Structure and functions of the following cell organelles: <ul style="list-style-type: none"> ○ Mitochondrion(membranes, cristae, F1 particles and matrix) ○ Peroxisomes and Glyoxysomes ○ Ribosomes (prokaryotic, eukaryotic and subunits) • Cell Division and its significance <ul style="list-style-type: none"> ○ Cell Cycle, structure of Interphase Nucleus(nuclear envelop, chromatin network, nucleolus and nucleoplasm) ○ Mitosis & Meiosis ○ Differences between Mitosis and Meiosis • Nucleic Acids: Types, structure and functions of DNA and RNA 		15 Lectures
Unit III : Cytogenetics		
<ul style="list-style-type: none"> • Variation in Chromosome structure (Chromosomal Aberrations) Definition, Origin, Cytological and Genetic Effects of the following: Deletions, Duplications, Inversions and Translocations. • Sex determination, Sex linked, sex influenced and sex limited traits : Sex determination- Chromosomal Methods: heterogametic males and heterogametic females. Sex determination in monoecious and dioecious plants. Genic Balance Theory of sex determination in <i>Drosophila</i>, Lyon's Hypothesis of X chromosome inactivation. Sex linked- eye colour in <i>Drosophila</i>, Haemophilia, colour blindness Sex influenced- baldness in man • Extranuclear Genetics Organelle heredity- <ul style="list-style-type: none"> ○ Chloroplast determines heredity - Plastid transmission in plants, Streptomycin resistance in <i>Chlamydomonas</i>. ○ Male sterility in maize 		15 Lectures
Unit III : Molecular Biology		
<ul style="list-style-type: none"> • DNA replication : Modes of Replication, Messelson and Stahl Experiment, DNA replication in prokaryotes and eukaryotes- enzymes involved and molecular mechanism of replication. • Protein Synthesis: <ul style="list-style-type: none"> ○ Central dogma of Protein synthesis ○ Transcription in prokaryotes and eukaryotes: promoter sites, initiation, elongation and termination. ○ RNA processing: Adenylation & Capping. 		15 Lectures



PRINCIPAL

Loknete Gopinathji Munde
Arts, Commerce & Science College
Mandangad, Dist. Ratnagiri-415203

PROPOSED SYBSC SYLLABUS FOR ACADEMIC YEAR 2017-18

Course Code	Title	Credits
USBO303	CURRENT TRENDS IN PLANT SCIENCES I	2 Credits (45 lectures)
	Unit 1: Pharmacognosy and phytochemistry <ul style="list-style-type: none"> • Introduction to pharmacopoeia • Indian pharmacopoeia, Indian Herbal Pharmacopoeia and Ayurvedic Pharmacopoeia • Study of Monograph from pharmacopoeia • Secondary Metabolites: Sources, properties, uses and adulterants, regional and seasonal variations • Adulterants: <i>Saraca asoca, Polyalthia longifolia, Terminalia arjuna, Terminalia tomentosa, Bacopa monnieri, Centella asiatica, Abrus, Glycyrrhiza, Phyllanthus amarus (Bhuiamla)</i> 	15 Lectures
	Unit 2: Forestry and Economic Botany <ul style="list-style-type: none"> • Forestry: Outline of types of forest in India • Forestry: Agro-forestry, Urban forestry, organic farming, Silviculture • Economic Botany: <ul style="list-style-type: none"> • Types of fibers: Jute and cotton, • Current trends in Fiber industries • Spices and condiments: Saffron and cardamom • Commercial market of spices 	15 Lectures
	Unit 3: Industry based on plant products <ul style="list-style-type: none"> • Aromatherapy- Introduction, Uses with few examples. Jojoba, lemon, jasmin • Botanical and nutraceuticals -<i>Spirulina, Vanillin, Garcinia indica/ Garcinia cambogia, Chlorella, and Kale.</i> • Enzymes industry: Cellulases, Papain, Bromelain • Biofuels. 	15 Lectures


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Loknete Gopinathji Munde
Arts, Commerce & Science College
Mandangad, Dist. Ratnagiri.415203

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

USBO-012	FORM AND FUNCTION II	2 Credits (45 lectures)
<p>Unit I : Anatomy</p> <ul style="list-style-type: none"> • Normal Secondary Growth in Dicotyledonous stem and root. • Growth rings, periderm, lenticels, tyloses, heart wood and sap wood. • Mechanical Tissue system <ul style="list-style-type: none"> ◦ Tissues providing mechanical strength and support and their disposition ◦ I-girders in aerial and underground organs • Types of Vascular Bundles. 		15 Lectures
<p>Unit II : Plant Physiology and Plant Biochemistry</p> <ul style="list-style-type: none"> • Respiration: Aerobic: Glycolysis, TCA Cycle, ETS & Energetic of respiration; Anaerobic respiration. • Photorespiration • Photoperiodism: Phytochrome Response and Vernalization with reference to flowering in higher plants, Physico-chemical properties of phytochrome, Pr-Pfr interconversion, role of phytochrome in flowering of SDPs and LDPs. • Vernalization mechanisms and applications. 		15 Lectures
<p>Unit III : Ecology and Environmental Botany</p> <ul style="list-style-type: none"> • Biogeochemical Cycles- Carbon, Nitrogen and Water. • Ecological factors: Concept of environmental factors. Soil as an edaphic factor, Soil composition, types of soil, soil formation, soil profile. • Community ecology- Characters of community - Quantitative characters and qualitative characters 		15 Lectures


PRINCIPAL
 Loknath Gopinathji Murde
 Arts, Commerce & Science College
 Mandangad, Dist. Ratnagiri.415203

UNIVERSITY OF MUMBAI
No. UG/153 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Sc. degree course, vide this office Circular No. UG/127 of 2011, dated 13th June, 2011 and the Principals of affiliated Colleges in Science are hereby informed that the proposal of the concern Chairperson of Ad-hoc Board of Studies in Botany approved by the Academic Council at its meeting held on 14th July, 2016 vide item No. 4.1 and that in accordance therewith, the revised paper pattern as per Choice Based Credit System for New Scheme of Examination (Theory Paper) Pattern of F.Y.B.Sc. (Botany) (Sem. I & II), which are available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI - 400 032
16 November, 2016

(Signature)
(Dr.M.A.Khan)
REGISTRAR

To,

The Principals of the affiliated Colleges in Science.

A.C/4.1/14.07.2016

No. UG/153A of 2016

MUMBAI-400 032

16 November, 2016

Copy forwarded with Compliments for information to:-

- 1) The Co-ordinator, Faculties of Science,
- 2) The Chairman, Board of Studies in Botany,
- 3) The Professor-cum-Director, Institute of Distance & Open Learning (IDOL)
- 4) The Director, Board of College and University Development,
- 5) The Co-Ordinator, University Computerization Centre,
- 6) The Controller of Examinations.

(Signature)
(Dr.M.A.Khan)
REGISTRAR

PRINCIPAL P.T.O.
Loknath Gopinathli Munde
Arts, Commerce & Science College
Mandangad, Dist. Ratnagiri-413203

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PRINCIPAL

(vi)

Loknete Gopinathji Munde
Arts, Commerce & Science College
Mandavde, Mandavde Taluka, Solapur District, Maharashtra - 431003

Syllabus

SEMESTER - I

Paper - I

UNIT - I

(15 L)

1. Algae

1. General characters of Chlorophyta : Distribution; cell structure; pigments; reserve food; range of thallus; reproduction - vegetative, asexual and sexual; alternation of generations.
2. Structure, life cycle and systematic position of *Nostoc* and *Spirogyra*.
3. Economic importance of Algae.

UNIT - II

(15 L)

2. Fungi

1. General characters of Phycomycetes : Occurrence; hyphal structure; reproduction; alternation of generations.
2. Structure, life cycle and systematic position of *Rhizopus* and *Aspergillus*.
3. Economic importance of Fungi.
4. Modes of nutrition in Fungi (Saprophytism and Parasitism)

UNIT - III

(15 L)

3. Bryophyta

1. General characters of Hepaticae
2. Structure, life cycle and systematic position of *Riccia*.

SEMESTER - I

Paper - II

UNIT - I

(15 L)

4. Cell Biology

1. General structure of plant cell : cell wall, Plasma membrane (bilayer lipid structure, fluid mosaic model).
2. Ultra structure and functions of the following cell organelles : Endoplasmic reticulum and Chloroplast.

UNIT - II

(15 L)

5. Ecology

1. Energy pyramids, energy flow through ecosystem.
2. Types of ecosystems : aquatic and terrestrial.


UNIT - III

(15 L)

6. Genetics

1. Phenotype / Genotype, Mendelian Genetics - monohybrid, dihybrid; test cross; back cross ratios.
2. Epistatic and non epistatic interactions; multiple alleles

(iv)


MANGALGIRI MUNICIPAL
Loknete Gopinathji Samudra
Arts, Commerce & Science College
Mandargol, Dist. Raichur. 415203

SEMESTER - II
Paper - I

UNIT - I

10. Pteridophytes

1. Structure life cycle, systematic position and alternation of generations in *Nephrolepis*.
2. Steelar evolution.

UNIT - II

11. Gymnosperms

1. Structure life cycle systematic position and alternation of generations in *Cycas*.
2. Economic importance of Gymnosperms.

UNIT - III

12. Angiosperms

1. Leaf : Simple leaf, types of compound leaves, Incisions of leaf, venation, phyllotaxy, types of stipules, leaf apex, leaf margin, leaf base, leaf shapes. Modifications of leaf spine, tendril, hooks, phyllode, pitcher, *Drosera* or insectivorous plants.
2. Inflorescence : simple raceme, spike, catkin, spadix, panicle. Cymose : monochasial, dichasial, polychasial.
Compound : corymb, umbel, cyathium, capitulum, verticillaster, hypanthodium.
3. Study of following families : Malvaceae, Amaryllidaceae.

SEMESTER - II
Paper - II

UNIT - I

13. Anatomy

1. Simple tissues, complex tissues.
2. Primary structure of dicot and monocot root, stem and leaf.
3. Epidermal tissue system : types of hair, monocot and dicot stomata.

UNIT - II

14. Physiology

1. Photosynthesis : Light reactions, photolysis of water, photophosphorylation (cyclic and non-cyclic), carbon fixation phase (C_3 , C_4 and CAM pathways).

UNIT - III

15. Medicinal Botany

1. Concept of primary and secondary metabolites, difference between primary and secondary metabolites.
2. Grandma's pouch : Following plants have to be studied with respect to botanical source, part of the plant used, active constituents present and medicinal uses : *Ocimum sanctum*, *Adathoda vasica*, *Zinziber officinale*, *Curcuma longa*, *Santalum album*, *Aloe vera*.

(v)


PRINCIPAL
Lotach, Gorimthi Munde
Arts, Science & Commerce College
Mandangur, Dist. Raichur, 415203

AC 26/06/2015
Item No. 4.5



UNIVERSITY OF MUMBAI

**Syllabus for the T.Y.B.Sc.
Program: B.Sc. Course: BOTANY**

(Credit Based Semester and Grading System with effect from
the academic year 2018–2019)


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Mandangad, Dist. Ratnagiri.415203

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SEMESTER VI

Course Code	UNIT	TOPICS	Credit	L / Weeks
USBO601	PLANT DIVERSITY III		2.5	1
	I	Bryophyta		
	II	Pteridophyta		
	III	Bryophyta and Pteridophyta: Applied aspects		
	IV	Gymnosperms		1
USBO602	PLANT DIVERSITY IV		2.5	1
	I	Angiosperms II		
	II	Anatomy II		
	III	Embryology		
	IV	Biostatistics		1
USBO603	FORM AND FUNCTION III		2.5	1
	I	Plant Biochemistry		
	II	Physiology II		
	III	Genetics		
	IV	Bioinformatics		1
USBO604	CURRENT TRENDS IN PLANT SCIENCES II		2.5	1
	I	Plant biotechnology II		
	II	Plant Geography		
	III	Economic Botany		
	IV	Post Harvest Technology		1
USBOP6	Practicals based on all the four courses in theory		6	16


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Course Code	Title	Credits
USBO502	PLANT DIVERSITY III	2.5 Credits (60 lectures)
Unit I : Paleobotany <ul style="list-style-type: none"> • <i>Calamites</i> - All form genera Stem, leaf, male and female frutification • <i>Lepidodendron</i>-All form genera root, stem, bark, leaf, male and female fructification • <i>Lyginopteris</i> - All form genera root, stem, leaf, male and female fructification • <i>Pentoxylon</i> - All form genera • Contribution of BirbalSahni, BirbalSahni Institute of Paleobotany, Lucknow 		(15 lectures)
Unit II : Angiosperms I <ul style="list-style-type: none"> • Morphology of flower and fruit • Complete classification of Bentham and Hooker (only for prescribed families), Merits and demerits • Bentham and Hooker's system of classification for flowering plants up to family with respect to the following prescribed families and economic and medicinal importance for members of the families <ul style="list-style-type: none"> • Capparidaceae • Umbelliferae • Cucurbitaceae • Rubiaceae • Solanaceae • Commelinaceae • Graminae 		(15 lectures)
Unit III : Anatomy <ul style="list-style-type: none"> • Anomalous secondary growth in the Stems of <i>Bignonia</i>, <i>Salvadora</i>, <i>Achyranthes</i>, <i>Aristolochia</i>, <i>Dracaena</i>. Storage roots of Beet, Radish • Root stem transition • Types of Stomata - Anomocytic, Anisocytic, Diacytic, Paracytic, and Graminaceous 		(15 lectures)
Unit IV : Palynology <ul style="list-style-type: none"> • Pollen Morphology • Pollen viability - storage • Germination and growth of pollen • Application of Palynology in honey industry, coal and oil exploration, Aerobiology and pollen allergies, forensic science 		(15 lectures)


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Course Code	Title	Credits
USBO602	PLANT DIVERSITY IV	2.5 Credits (60 lectures)
	Unit I: Angiosperms II	
	<ul style="list-style-type: none"> • Major Botanic gardens of India – Indian Botanic Garden, Howrah; National Botanic Garden (NBRI) Lucknow; Lloyd Botanic Garden, Darjeeling; Lalbaugh or Mysore State Botanic Garden Bangalore • Botanical survey of India and regional branches of India • Study of following plant families <ul style="list-style-type: none"> ➤ Combretaceae ➤ Rhamnaceae ➤ Asclepiadaceae ➤ Labiatae ➤ Euphorbiaceae ➤ Cannaceae • Hutchinson's classification – merits and demerits 	(15 lectures)
	Unit II: Anatomy II	
	Ecological anatomy <ul style="list-style-type: none"> • Hydrophytes – submerged, floating, rooted • Hygrophytes - <i>Typha</i> • Mesophytes • Sciophytes • Halophytes • Epiphytes • Xerophytes 	(15 lectures)
	Unit III: Embryology	
	<ul style="list-style-type: none"> • Microsporogenesis • Megasporogenesis - Development of monosporic type, examples of all embryo sacs • Types of ovules • Double fertilization • Development of embryo – <i>Capsella</i> 	(15 lectures)
	Unit IV: Biostatistics	
	<ul style="list-style-type: none"> • Test of significance student's <i>t</i>-test (paired and unpaired) • Regression • ANOVA (one way) 	(15 lectures)

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Item No. 45

UNIVERSITY OF MUMBAI



**Syllabus for the T.Y.B.Sc.
Program: B.Sc.
Course: BOTANY**

(Credit Based Semester and Grading System with
effect from the academic year 2016-2017)


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T.Y.B.Sc. Botany Syllabus
Restructured for Credit Based and Grading System
To be implemented from the Academic year 2016-2017
SEMESTER V

Course Code	UNIT	TOPICS	Credits	L / Week
USBO501	<u>PLANT DIVERSITY III</u>		2.5	1
	I	Algae		
	II	Fungi		
	III	Plant Pathology		
	IV	Microbiology		
USBO502	<u>PLANT DIVERSITY IV</u>		2.5	1
	I	Paleo botany		
	II	Angiosperms I		
	III	Anatomy I		
	IV	Palynology		
USBO503	<u>FORM AND FUNCTION III</u>		2.5	1
	I	Cytology and Molecular Biology		
	II	Physiology I		
	III	Environmental Botany		
	IV	Biostatistics		
USBO504	<u>CURRENT TRENDS IN PLANT SCIENCES II</u>		2.5	1
	I	Food as medicine and Nutrition and the Mushroom Industry		
	II	Plant Tissue Culture		
	III	Instrumentation		
	IV	Pharmacognosy & Medicinal Botany		
USBOP5	Practical based on all the four courses in theory		6	16


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L/Week	
1	
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<ul style="list-style-type: none"> • Applications of Palynology in Taxonomy, Honey Industry, Coal and oil exploration, Aerobiology and Pollen Allergies, Forensic Science. 		
Course Code	Title	Credits
USBO503	FORM AND FUNCTION III	2.5 Credits (60 lectures)
Unit I: Cytology and Molecular Biology <ul style="list-style-type: none"> • Structure and function of nucleus (Complete detail) • Structure and function of vacuole • Structure and function of giant chromosomes • The Genetic Code- characteristics of the Genetic Code • Translation in prokaryotes and eukaryotes 		15 Lectures
Unit II: Physiology I <ul style="list-style-type: none"> • Water relations – potential, osmosis, transpiration, imbibition, transport • Mineral Nutrition: Macro and micronutrients, criteria of essentiality of elements, role of essential elements, transport of ions across cell membranes, active and passive transport, carriers, channels and pumps. • Translocation of solutes Composition of phloem sap, girdling experiment, pressure flow model, phloem loading and unloading. Mechanisms of sieve tube translocation. • Vegetative Growth: General phases of growth, Growth Curves, Factors affecting growth – External (environmental) and internal (genetic, hormonal, nutritional); Role of plant growth regulating substances – Auxins, Cytokinins and Gibberellins and their commercial applications. 		15 Lectures
Unit III: Environmental Botany <ul style="list-style-type: none"> • Bioremediation: Principles, Factors responsible and Microbial population in bioremediation. • Biomagnifications. • Bioaccumulation and Biotransformation. • Phytoremediation: Metals, Organic pollutants. 		15 Lectures
Unit IV: Biostatistics <ul style="list-style-type: none"> • Test of significance student's <i>t</i>-test (paired and unpaired) • Regression • ANOVA (one way) 		15 Lectures

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**Syllabus for the T.Y.B.Sc.
Program: B.Sc. Course: BOTANY**

(Credit Based Semester and Grading System with effect from
the academic year 2018–2019)


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T.Y.B.Sc. Botany Syllabus
Restructured for Credit Based and Grading System
To be implemented from the Academic year 2018-2019
SEMESTER V

Course Code	UNIT	TOPICS	Credit	L / Weeks
USBO501	PLANT DIVERSITY III		2.5	1
	I	Microbiology		
	II	Algae		
	III	Fungi		
	IV	Plant Pathology		
USBO502	PLANT DIVERSITY IV		2.5	1
	I	Paleobotany		
	II	Angiosperms I		
	III	Anatomy I		
	IV	Palynology		
USBO503	FORM AND FUNCTION III		2.5	1
	I	Cytology and Molecular biology		
	II	Physiology I		
	III	Environmental Botany		
	IV	Plant tissue culture		
USBO504	CURRENT TRENDS IN PLANT SCIENCES II		2.5	1
	I	Ethnobotany and Mushroom Industry		
	II	Biotechnology I		
	III	Instrumentation		
	IV	Pharmacognosy and medicinal botany		
USBOP5	Practicals based on all the four courses in theory		6	16


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USBO503	Title	Credits
UNIT I : CYTOLOGY AND MOLECULAR BIOLOGY Structure and function of nucleus Structure and function of vacuole Structure and function of giant chromosomes The genetic code: Characteristics of the genetic code Transcription and Translation in Eukaryotes	FORM AND FUNCTIONS- II	2.5 Credits (60 lectures)
UNIT II: PHYSIOLOGY Water relations: Potential, osmosis, transpiration, imbibition, Solute transport: Transport of ions across cell membranes, active and passive transport, carriers, channels and pumps. Translocation of solutes: Composition of phloem sap, girdling experiment, pressure flow model, phloem loading and unloading, anatomy of sieve tube elements, mechanisms of sieve tube translocation, Munch's hypothesis.		(15 lectures)
UNIT III ENVIRONMENTAL BOTANY Bioremediation: Principles, factors responsible and microbial population in bioremediation. Phytoremediation: Metals, Organic pollutants Plant succession: Hydrosere and Xerosere – Formation of barren space, succession on the land citing different seres leading upto the climax, succession in water, ecesis, poly and monoclimal theories		(15 lectures)
UNIT IV PLANT TISSUE CULTURE Aspects of micropropagation with reference to Floriculture: Detailed study of Orchid cultivation Plant cell suspension cultures for the production of secondary metabolites: with special reference to Shikonin production. Somatic embryogenesis and artificial seeds: Protoplast fusion and Somatic hybridization: i) Concept , definition, and various methods of protoplast fusion ii) Applications of somatic hybridization in agriculture		(15 lectures)


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Course Code	Title	Credits
USBO603	FORM AND FUNCTION III	2.5 Credits (60 lectures)
UNIT I PLANT BIOCHEMISTRY		15 Lectures
<ul style="list-style-type: none"> Structure of biomolecules: Carbohydrates (sugars, starch, cellulose, pectin, lipids (fatty acids and glycerol), proteins (amino acids) Enzymes: Nomenclature , classification, mode of action, Enzyme kinetics, Michaelis Menten equation, competitive non competitive, and uncompetitive inhibitors. 		
UNIT II PLANT PHYSIOLOGY II		15 Lectures
<ul style="list-style-type: none"> NITROGEN METABOLISM: Nitrogen cycle, root nodule formation, and leg haemoglobin, nitrogenase activity, assimilation of nitrates, (NR , NiR activity), assimilation of ammonia, (amination and transamination reactions) , nitrogen assimilation and carbohydrate utilisation. Physiological effects and commercial applications of Auxins, Gibberillins, Cytokinins and Abscisic acid 		
UNIT III : GENETICS		15 Lectures
<ul style="list-style-type: none"> Genetic mapping in eukaryotes: discovery of genetic linkage, gene recombination, construction of genetic maps, three point crosses and mapping chromosomes, problems based on the same Gene mutations: definition, types of mutations, causes of mutations, induced mutations, the Ames's test Metabolic disorders – enzymatic and non enzymatic: Gene control of enzyme structure Garrod's hypothesis of inborn errors of metabolism, Phenyl ketone urea, albinism, sickle cell anaemia 		
UNIT IV : BIOINFORMATICS		15 Lectures
<ul style="list-style-type: none"> Organization of biological data, databases Exploration of data bases, retrieval of desired data, BLAST. Protein structure analysis and application Multiple sequence analysis and phylogenetic analysis 		



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F.Y. and 2nd Y. B.Sc.
New Syllabus - 2017-18

AC 26/2/2015
Item No. 4.70

UNIVERSITY OF MUMBAI



Syllabus for **F.Y.B.Sc.** Program BSc Course: **ZOOLOGY**

Semester I and II

(Credit Based Semester and Grading System
with effect from the academic year 2015-2016)

2016-17

2017-18

2018-19

2019-20

2020-21

2021-22

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SEMESTER-II

USZO201 (Course: 3)

Ecology and Wildlife Management

Unit 1: Population ecology:

(15 L)

Objective: To facilitate the learning of population ecology, its dynamics and regulatory factors important for its sustenance.

Desired Outcome: This unit would allow learners to study about nature of animal population, specific factors affecting its growth and its impact on the population of other life form.

1.1: Population dynamics

- 1.1.1: Population density
- 1.1.2: Natality
- 1.1.3: Mortality
- 1.1.4: Fecundity
- 1.1.5: Age structure
- 1.1.6: Sex ratio
- 1.1.7: Life tables
- 1.1.8: Survivorship curves
- 1.1.9: Population dispersal and distribution patterns
- 1.1.10 Niche concept

1.2: Population growth regulation

- 1.2.1: Intrinsic mechanism – Density dependent fluctuations and oscillations
- 1.2.2: Extrinsic mechanism- Density independent, environmental and climate factors, population interactions

1.3: Population growth pattern

- 1.3.1: Sigmoid
- 1.3.2: J Shaped


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Unit 2: Animal Biotechnology

(15 L)

Objective:

To acquaint learners to the modern developments & concepts of Zoology highlighting their applications aimed for the benefit of human being.

Desired Outcome: Learners would understand recent advances in the subject and their applications for the betterment of mankind; and the young minds would be tuned to think out of the box.

2.1: Biotechnology: Scope and achievements of Biotechnology (Fishery, Animal Husbandry, Medical, Industrial)

2.2: Transgenesis: Retro viral method, Nuclear transplantation method, DNA microinjection method and Embryonic stem cell method

2.3: Cloning (Dolly)

2.4: Ethical issues of transgenic and cloned animals

2.5: Applications of Biotechnology:

2.5.1: DNA fingerprinting: Technique in brief and its application in forensic science (Crime Investigation)

2.5.2: Recombinant DNA in medicines (recombinant insulin)

2.5.3: Gene therapy: Ex-vivo and In vivo, Severe Combined Immunodeficiency (SCID), Cystic Fibrosis

2.5.4: Green genes: Green Fluorescent Protein (GFP) from Jelly fish-valuable as reporter genes used to detect food poisoning.



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21 May, 2017
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- Geographic variation (Cline)
- Speciation and Isolating mechanisms: Definition and modes of speciation (allopatric, sympatric, parapatric and peripatric)
- Geographical isolation
- Reproductive isolation and its isolating mechanisms (prezygotic and postzygotic)

2.4 **Macroevolution and megaevolution:** Concept and Patterns of macroevolution (stasis, preadaptation /exaptation, mass extinctions, adaptive radiation and coevolution), Megaevolution

Unit: 3 Scientific Attitude Methodology, Scientific Writing and Ethics in Scientific Research

Objective:

- To inculcate scientific temperament in the learner

Desired outcome:

- The learner would develop qualities such as critical thinking and analysis
- The learner will imbibe the skills of scientific communication and he/she will understand the ethical aspects of research

3.1 Process of science:

- A dynamic approach to investigation: The Scientific method, Deductive reasoning and inductive reasoning, Critical thinking, Role of chance in scientific discovery (serendipity)
- Scientific research: Definition, difference between method and methodology, characteristics, types
- Steps in the Scientific method: Identification of research problem, formulation of research hypothesis, testing the hypothesis using experiments or surveys, preparing research/study design including methodology and execution (appropriate controls, sample size, technically sound, free from bias, repeat experiments for consistency), documentation of data, data analysis and interpretation, results and conclusions

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AC Item No.

UNIVERSITY OF MUMBAI



Program: **S.Y.B. Sc.**

Course: **Zoology**

Syllabus for Semester III & IV

(Credit Based Semester and Grading System with
effect from the academic year 2018-2019)

to 2020-21

$100 = 40$
 $100 = ?$

$\frac{150 \times 40}{100} = 60$

R. Munde

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SEMESTER III

Sr. No.	USZO301 (Course-V)	No. of lectures allotted	Learning pleasure
	Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids		
	Unit 1: Fundamentals of Genetics	15L	25hrs
	<p>Objectives:</p> <ul style="list-style-type: none"> > To introduce basic terms of genetics. > To develop conceptual clarity of Mendelian principles of inheritance and other forms and pattern of inheritance 		
	<p>Desired outcome:</p> <ul style="list-style-type: none"> > Learner would comprehend and apply the principles of inheritance to study heredity. > Learner will understand the concept of multiple alleles, linkage and crossing over. 		
1.1	<p>Introduction to Genetics</p> <ul style="list-style-type: none"> • Definition, Scope and Importance of Genetics. • Classical and Modern concept of Gene (Cistron, Muton, Recon). • Brief explanation of the following terms: Allele, Wild type and Mutant alleles, Locus, Dominant and Recessive traits, Homozygous and Heterozygous, Genotype and Phenotype, Genome. 	02L	02hrs
1.2	<p>Mendelian Genetics</p> <ul style="list-style-type: none"> • Mendelian Genetics: Monohybrid & Dihybrid Cross, Test Cross, Back Cross, Mendel's Laws of Inheritance, Mendelian Traits in Man. • Exceptions to Mendelian inheritance: Incomplete dominance, Co-dominance, Lethal Genes, Epistasis - Recessive, Double recessive, Dominant and Double dominant. • Chromosome theory of inheritance. • Pedigree Analysis-Autosomal dominant and recessive, X-linked dominant and recessive. 	08L	12hrs

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2.2	Sex-determination	07L	10hrs
	<ul style="list-style-type: none"> • Chromosomal Mechanisms: XX-XO, XX-XY, ZZ-ZW • Sex determination in Honey bees: Haplo-diploidy • Sex determination in <i>Drosophila</i>- Genic balance theory, Intermes, Gynandromorpha • Parthenogenesis • Hormonal influence on sex determination- Freemartin and Sex reversal. • Role of environmental factors- <i>Bonellia</i> and Crocodile • Barr bodies and Lyon hypothesis 		
2.3	Sex linked, sex influenced and sex-limited inheritance.	04L	08hrs
	<ul style="list-style-type: none"> • X-linked: Colour-blindness, Haemophilia • Y-linked: Hypertrichosis • Sex-influenced genes • Sex-limited genes 		
Unit: 3 Nucleic acids		15L	30hrs
	Objectives: <ul style="list-style-type: none"> ➤ To introduce the learner to the classical experiments proving DNA as the genetic material. ➤ To introduce the learner the structure of nucleic acids and the concept of central dogma of molecular biology. ➤ To familiarize the learner with the concept of gene expression and regulation. 		
	Desired outcome: <ul style="list-style-type: none"> ➤ Learner will understand the importance of nucleic acids as genetic material. ➤ Learner would comprehend and appreciate the regulation of gene expressions. 		
3.1	Genetic material	07L	14hrs
	<ul style="list-style-type: none"> • Griffith's transformation experiment, Avery-Macleod & McCarty 		

B. M.

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SEMESTER IV

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES /WEEK
USZO401	I	Origin and Evolution of Life	2	1
	II	Population Genetics and Evolution,		1
	III	Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research		1
USZO402	I	Cell Biology	2	1
	II	Endomembrane System		1
	III	Biomolecules		1
USZOE403A ELECTIVE 1	I	Comparative Embryology	2	1
	II	Aspects of Human Reproduction } selected		1
	III	Pollution and its Effect on Organisms		1
USZOE403B ELECTIVE 2	I	Dairy Industry ✓	2	1
	II	Sericulture ✓ } Selected Fostered		1
	III	Aquaculture ✓		1
USZOP4	Practicals based on all three courses		03	9

Important Note: College may choose either Elective 1 or Elective 2 for Semester III and Semester IV as their third course depending on the preference selected by majority of the students and endorsed by Head of the Department of Zoology and the Principal of the college.


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SEMESTER IV

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES /WEEK
USZO401	I	Origin and Evolution of Life	2	1
	II	Population Genetics and Evolution,		1
	III	Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research		1
USZO402	I	Cell Biology	2	1
	II	Endomembrane System		1
	III	Biomolecules		1
USZOE403A ELECTIVE 1	I	Comparative Embryology	2	1
	II	Aspects of Human Reproduction		1
	III	Pollution and its Effect on Organisms		1
USZOE403B ELECTIVE 2	I	Dairy Industry ✓	2	1
	II	Sericulture ✓		1
	III	Aquaculture ✓		1
USZOP4	Practicals based on all three courses		03	9

Important Note: College may choose either Elective 1 or Elective 2 for Semester III and Semester IV as their third course depending on the preference selected by majority of the students and endorsed by Head of the Department of Zoology and the Principal of the college.


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- Sperm bank, cryopreservation of gametes and embryos
- Surrogacy

UNIT3: Pollution and its effect on organisms

15L 27hrs

Objective:

- > To provide a panoramic view of impact of human activities leading to pollution and its implications.

Desired Outcome:

- > The learners will be sensitized about the adverse effects of pollution and measures to control it.

3.1	Air Pollution <ul style="list-style-type: none"> • Types and sources of air pollutant • Effects of air pollution on organisms, its control and abatement measures 	03L	6hrs
3.2	Water Pollution <ul style="list-style-type: none"> • Types and sources of water pollutant • Effects of water pollution on organisms, its control and abatement measures 	03L	6hrs
3.3	Soil Pollution <ul style="list-style-type: none"> • Types and sources of soil pollutant • Effects of soil pollution on organisms, its control and abatement measures 	03L	4hrs
3.4	Sound pollution <ul style="list-style-type: none"> • Different sources of sound pollution • Effects of sound pollution on organisms, its control and abatement measures 	01L	3hrs
3.5	Pollution by radioactive substances	01L	2hrs
3.6	Pollution by solid wastes <ul style="list-style-type: none"> • Types and sources, • Effects of solid waste pollution, its control and abatement measures 	02L	4hrs
3.7	Pollution – Climate Change and Global Warming	02L	2hrs

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