

Lesson Plan for first year classes UG/PG

Class: B.Sc 1st year

Subject: English

Semester: Odd

Week	Topics
1st week 22-08-2022 to 27-08-2022	Introduction of the syllabus and examination pattern <u>about the poet William Shakespeare</u>
2nd week 29-08-2022 to 03-09-2022	Let me Not to the marriage of true Minds explanation of <u>the poem and textual exercise</u>
3rd week 05-09-2022 to 10-09-2022	Death be not proud (Introduction of the poem poet and <u>analysis of the poem textual question answer discussion</u>)
4th week 12-09-2022 to 17-09-2022	On his blindness (Introduction of the poem ,poet and analysis of the poem, textual question answer discussion)Assignment-1st (Topic-1.Death be not proud 2.On his blindness
5th week 19-09-2022 to 24-09-2022	The Retreat by Henry Vaughan (About the poem, <u>Explanation of the poem, textual exercise</u>
6th week 26-09-2022 to 01-10-2022	Shadwell by John Dryden(About the poem, <u>Explanation of the poem, textual exercise</u>)
7th week 03-10-2022 to 08-10-2022	Know Then Thyself (About the poem, <u>Explanation of the poem, textual exercise</u>
8th week 10-10-2022 to 15-10-2022 _____	<u>Common errors in the use of noun, pronoun, adjective</u>
9th week 17-10-2022 to 21-10-2022 _____	Common errors in the use of articles,tenses/verbs,adverbs <u>and practice of topic</u>
22-10-2022 to 26-10-2022	<u>DIWALI VACATIONS</u>
10th week 27-10-2022 to 29-10-2022	
	Preposition of time,place,position,direction and other <u>uses of Preposition</u>
11th week 31-10-2022 to 05-11-2022	The little black boy by WilliamBlake (analysis of the poem <u>and textual exercise</u>)
12th week 07-11-2022 to 12-11-2022 _____	Three years she grew in Sun and shower(<u>analysis of the poem and textual exercise</u>) + <u>assignment test of the poem</u>



13th week 14-11-2022 to 19-11-2022	England in 1819 (explanation of the poem and discussion of question answers)
14th week 21-11-2022 to 26-11-2022	Crossing the bar(explanation of the poem and discussion_of question answers)
15th week 28-11-2022 to 03-12-2022	Phrasal verbs discussion and practice
16th week 05-12-2022 to 10-12-2022	_Translation (Hindi to English)
17th week 12-12-2022 to 17-12-2022__	Paragraph practice ,doubt clearing session
18th week 19-12-2022 to 24-12-2022	Revision
19th week 26-12-2022 to 27-12-2022	Revision

Class : B.Sc 1st year

Subject: English

Semester: EVEN

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Introduction of syllabus
2nd week 16-01-2023 to 21-01-2023	C.E.M. Joad's Our Civilization with exercises
3rd week 23-01-2023 to 28-01-2023	Practice of questions
4th week 30-01-2023 to 04-02-2023	Jayant V. Narlikar's It's Question Time with exercise
5th week 06-02-2023 to 11-02-2023	N. Ram's an Interview with Dr. Christiaan Barnard with exercise.
6th week 13-02-2023 to 18-02-2023	Doubt session - chapter1,2,3
7th week 20-02-2023 to 25-02-2023	Class assignment 1st , Practice of tenses
8th week 27-02-2023 to 04-03-2023	Translation from English to Hindi



05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	B.R. Ambedkar's Untouchability and the Caste System- Explanation
10th week 20-03-2023 to 25-03-2023	Discussion and practice of short and long questions chapter- 4 , class assignment 2 nd
11th week 27-03-2023 to 01-04-2023	Huck Gutman's In humanisation of War with exercise , Activity :Speech based on any inhumane effects of war
12th week 03-04-2023 to 08-04-2023	Precise writing : How to write a Precis
13th week 10-04-2023 to 15-04-2023	Practice of precis , Assignment Test
14th week 17-04-2023 to 22-04-2023	Letter writing : Formal letters
15th week 24-04-2023 to 29-04-2023	Informal letters
	Revision
16th week 05-12-2022 to 10-12-2022	_Translation (Hindi to English)
17th week 12-12-2022 to 17-12-2022__	Paragraph practice ,doubt clearing session
18th week 19-12-2022 to 24-12-2022	Revision
19th week 26-12-2022 to 27-12-2022	Revision

Lesson Plan for Second and Third year classes UG / Second year classes PG

Class:B.A 2nd year , 3rd semester

Subject:English compulsory

Semester: Odd (3rd semester)

Week	Topics
1st week 16-08-2022 to 20-08-2022	Introduction of the syllabus and examination pattern



2nd week 22-08-2022 to 27-08-2022	Literary terms and devices - explanation with examples
3 rd week 29-08-2022 to 03-09-2022	SONNET XVIII - explanation of the poem , discussion of Q/A and book exercise
4 th week 05-09-2022 to 10-09-2022	Non - finite verb : infinitive (explanation and book exercise) . Non - finite verb : Gerund (explanation and book exercise)
5th week 12-09-2022 to 17-09-2022	KNOW THEN THYSELF - explanation of the poem , discussion of Q/A and book exercise
6th week 19-09-2022 to 24-09-2022	ELEGY WRITTEN IN COUNTRY CHURCHYARD - explanation of the poem , discussion of Q/A and book exercise
7th week 26-09-2022 to 01-10-2022	Preposition - 1 , Preposition - 2 : explanation and book exercise
8th week 03-10-2022 to 08-10-2022	THE WORLD IS TOO MUCH WITH US - explanation of the poem , discussion of Q/A and book exercise , ASSIGNMENT - 1ST
9th week 10-10-2022 to 15-10-2022	ODE ON A GRECIAN URN - explanation of the poem , discussion of Q/A and book exercise
10th week 17-10-2022 to 21-10-2022	CLAUSE : Relative Clause - explanation and book exercise
22-10-2022 to 26-10-2022	DIWALI VACATIONS
11th week 27-10-2022 to 29-10-2022	Revision of the poems - SONNET XVIII , KNOW THEN THYSELF , ELEGY WRITTEN IN A COUNTRY CHURCHYARD ,
12th week 31-10-2022 to 05-11-2022	Revision of the poems -THE WORLD IS TOO MUCH WITH US , ODE ON A GRECIAN URN
13th week 07-11-2022 to 12-11-2022	MY LAST DUCHESS - explanation of the poem , discussion of Q/A and book exercise
14th week 14-11-2022 to 19-11-2022	Noun Clause and Adverbial Clause : explanation and book exercise , ASSIGNMENT - 2ND
15th week 21-11-2022 to 26-11-2022	WHEN YOU ARE OLD - explanation of the poem , discussion of Q/A and book exercise



16th week 28-11-2022 to 03-12-2022	Condition WHERE THE MIND IS WITHOUT FEAR and BANGLE SELLERS - Explanation of the poems and book exercise als , verb pattern , prefixes and suffixes : explanation and book exercise ANOTHER WOMAN - explanation of the poem and book exercise
17th week 05-12-2022 to 07-12-2022	Revision of the poems - MY LAST DUCHESS , WHEN YOU ARE OLD WHERE THE MIND IS WITHOUT FEAR ,THE BANGLE SELLERS and ANOTHER WOMAN Discussion of previous year papers and Revision of complete syllabus
19th week 26-12-2022 to 27-12-2022	Revision

Note: Mention Assignments and Unit Test as per scheduled

Class: B.A 2nd year ,4th Semester

Subject: English compulsory

Semester: Even (4th Semester)

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Introduction of the syllabus and examination pattern. Discussion of the following topics - Phoneme , syllable and syllabic consonants , word stress , stress in compound words , sentence stress and book exercise
2nd week 16-01-2023 to 21-01-2023	THE ENVOY - Introduction Of the playwright , explanation of the play , discussion of Q/A and book exercise
3rd week 23-01-2023 to 28-01-2023	Translation - Hindi to English and vice- versa , Tenses - Past Tense , present tense and future tense (rules , examples and exercise)
4th week 30-01-2023 to 04-02-2023	THE SWAN SONG - Introduction of the playwright , explanation of the play , discussion of the Q/A and book exercise



5th week 06-02-2023 to 11-02-2023	Dialogue writing - explanation and book exercise
6th week 13-02-2023 to 18-02-2023	MONKEY'S PAW - Introduction of the playwright , explanation of the play
7th week 20-02-2023 to 25-02-2023	MONKEY'S PAW - explanation of the remaining part , discussion of Q/A and book exercise
8th week 27-02-2023 to 04-03-2023	E - mail writing and book exercise .ASSIGNMENT - 1ST BEFORE BREAKFAST - Introduction of the playwright , explanation of the play , discussion of Q/A and book exercise
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Resume writing and book exercise
10th week 20-03-2023 to 25-03-2023	Revision of the plays - THE ENVOY and THE SWAN SONG , ASSIGNMENT - 2ND
11th week 27-03-2023 to 01-04-2023	Revision Of the plays - THE MONKEY'S PAW and BEFORE BREAKFAST , ASSIGNMENT TEST
12th week 03-04-2023 to 08-04-2023	THE SLEEPWALKERS - Introduction of the playwright , explanation of the play , discussion of Q/A and book exercise
14th week 17-04-2023 to 22-04-2023	Book review and book exercise Paragraph writing Format and discussion of current topics
15th week 24-04-2023 to 29-04-2023	Revision of SLEEPWALKERS , book review and Paragraph writing Discussion of previous papers and Revision of complete syllabus
15th week 21-11-2022 to 26-11-2022	WHEN YOU ARE OLD - explanation of the poem , discussion of Q/A and book exercise
16th week 28-11-2022 to 03-12-2022	Condition WHERE THE MIND IS WITHOUT FEAR and BANGLE SELLERS - Explanation of the poems and book exercise als , verb pattern , prefixes and suffixes : explanation and book exercise ANOTHER WOMAN - explanation of the poem and book exercise



17th week 05-12-2022 to 07-12-2022	Revision of the poems - MY LAST DUCHESS , WHEN YOU ARE OLD WHERE THE MIND IS WITHOUT FEAR ,THE BANGLE SELLERS and ANOTHER WOMAN
	Discussion of previous year papers and Revision of complete syllabus
19th week 26-12-2022 to 27-12-2022	Revision

Note: Mention Assignments and Unit Test as per scheduled

Lesson Plan for Second and Third year classes UG / Second year classes PG

Class: B.A 2nd year , 3rd semester

Subject: English compulsory

Semester: Odd (3rd semester)

Week	Topics
1st week 16-08-2022 to 20-08-2022	Introduction of the syllabus and examination pattern
2nd week 22-08-2022 to 27-08-2022	Literary terms and devices - explanation with examples
3 rd week 29-08-2022 to 03-09-2022	SONNET XVIII - explanation of the poem , discussion of Q/A and book exercise
4 th week 05-09-2022 to 10-09-2022	Non - finite verb : infinitive (explanation and book exercise) . Non - finite verb : Gerund (explanation and book exercise)
5th week 12-09-2022 to 17-09-2022	KNOW THEN THYSELF - explanation of the poem , discussion of Q/A and book exercise



6th week 19-09-2022 to 24-09-2022	ELEGY WRITTEN IN COUNTRY CHURCHYARD - explanation of the poem , discussion of Q/A and book exercise
7th week 26-09-2022 to 01-10-2022	Preposition - 1 , Preposition - 2 : explanation and book exercise
8th week 03-10-2022 to 08-10-2022	THE WORLD IS TOO MUCH WITH US - explanation of the poem , discussion of Q/A and book exercise , ASSIGNMENT - 1ST
9th week 10-10-2022 to 15-10-2022	ODE ON A GRECIAN URN - explanation of the poem , discussion of Q/A and book exercise
10th week 17-10-2022 to 21-10-2022	CLAUSE : Relative Clause - explanation and book exercise
22-10-2022 to 26-10-2022	DIWALI VACATIONS
11th week 27-10-2022 to 29-10-2022	Revision of the poems - SONNET XVIII , KNOW THEN THYSELF , ELEGY WRITTEN IN A COUNTRY CHURCHYARD , THE WORLD IS TOO MUCH WITH US , ODE ON A GRECIAN URN
	MY LAST DUCHESS - explanation of the poem , discussion of Q/A and book exercise
12th week 31-10-2022 to 05-11-2022	Noun Clause and Adverbial Clause : explanation and book exercise , ASSIGNMENT - 2ND
13th week 07-11-2022 to 12-11-2022	WHEN YOU ARE OLD - explanation of the poem , discussion of Q/A and book exercise
14th week 14-11-2022 to 19-11-2022	WHERE THE MIND IS WITHOUT FEAR and BANGLE SELLERS - Explanation of the poems and book exercise
15th week 21-11-2022 to 26-11-2022	Conditionals , verb pattern , prefixes and suffixes : explanation and book exercise
16th week 28-11-2022 to 03-12-2022	ANOTHER WOMAN - explanation of the poem and book exercise
17th week 05-12-2022 to 07-12-2022	Revision of the poems - MY LAST DUCHESS , WHEN YOU ARE OLD WHERE THE MIND IS WITHOUT FEAR ,THE BANGLE SELLERS and ANOTHER WOMAN
	Discussion of previous year papers and Revision of complete syllabus



17th week 05-12-2022 to 07-12-2022	Revision of the poems - MY LAST DUCHESS , WHEN YOU ARE OLD WHERE THE MIND IS WITHOUT FEAR ,THE BANGLE SELLERS and ANOTHER WOMAN
	Discussion of previous year papers and Revision of complete syllabus
19th week 26-12-2022 to 27-12-2022	Revision

Note: Mention Assignments and Unit Test as per scheduled

Class: B.A 2nd year ,4th Semester

Subject: English compulsory

Semester: Even (4th Semester)

Week	Topics
1st week 16-08-2022 to 20-08-2022	Introduction of the syllabus and examination pattern
2nd week 22-08-2022 to 27-08-2022	Literary terms and devices - explanation with examples
3 rd week 29-08-2022 to 03-09-2022	SONNET XVIII - explanation of the poem , discussion of Q/A and book exercise
4 th week 05-09-2022 to 10-09-2022	Non - finite verb : infinitive (explanation and book exercise) . Non - finite verb : Gerund (explanation and book exercise)
5th week 12-09-2022 to 17-09-2022	KNOW THEN THYSELF - explanation of the poem , discussion of Q/A and book exercise
6th week 19-09-2022 to 24-09-2022	ELEGY WRITTEN IN COUNTRY CHURCHYARD - explanation of the poem , discussion of Q/A and book exercise
7th week 26-09-2022 to 01-10-2022	Preposition - 1 , Preposition - 2 : explanation and book exercise
8th week 03-10-2022 to 08-10-2022	THE WORLD IS TOO MUCH WITH US - explanation of the poem , discussion of Q/A and book exercise , ASSIGNMENT - 1ST



9th week 10-10-2022 to 15-10-2022	ODE ON A GRECIAN URN - explanation of the poem , discussion of Q/A and book exercise
10th week 17-10-2022 to 21-10-2022	CLAUSE : Relative Clause - explanation and book exercise
22-10-2022 to 26-10-2022	DIWALI VACATIONS
11th week 27-10-2022 to 29-10-2022	Revision of the poems - SONNET XVIII , KNOW THEN THYSELF , ELEGY WRITTEN IN A COUNTRY CHURCHYARD , THE WORLD IS TOO MUCH WITH US , ODE ON A GRECIAN URN
	MY LAST DUCHESS - explanation of the poem , discussion of Q/A and book exercise
12th week 31-10-2022 to 05-11-2022	Noun Clause and Adverbial Clause : explanation and book exercise , ASSIGNMENT - 2ND
13th week 07-11-2022 to 12-11-2022	WHEN YOU ARE OLD - explanation of the poem , discussion of Q/A and book exercise
14th week 14-11-2022 to 19-11-2022	WHERE THE MIND IS WITHOUT FEAR and BANGLE SELLERS - Explanation of the poems and book exercise
15th week 21-11-2022 to 26-11-2022	Conditionals , verb pattern , prefixes and suffixes : explanation and book exercise
16th week 28-11-2022 to 03-12-2022	ANOTHER WOMAN - explanation of the poem and book exercise
17th week 05-12-2022 to 07-12-2022	Revision of the poems - MY LAST DUCHESS , WHEN YOU ARE OLD WHERE THE MIND IS WITHOUT FEAR ,THE BANGLE SELLERS and ANOTHER WOMAN
	Discussion of previous year papers and Revision of complete syllabus
17th week 05-12-2022 to 07-12-2022	Revision of the poems - MY LAST DUCHESS , WHEN YOU ARE OLD WHERE THE MIND IS WITHOUT FEAR ,THE BANGLE SELLERS and ANOTHER WOMAN
	Discussion of previous year papers and Revision of complete syllabus
19th week 26-12-2022 to 27-12-2022	Revision

Note: Mention Assignments and Unit Test as per scheduled



Lesson Plan for first year classes UG/PG

Class: BA first year

Subject: Functional English

Semester: Odd

Week	Topics
1st week 22-08-2022 to 27-08-2022	Definition and scope of linguistics
2nd week 29-08-2022 to 03-09-2022	Articles, parts of speech
3rd week 05-09-2022 to 10-09-2022	Difference between phonetics and phonology and Nouns
4th week 12-09-2022 to 17-09-2022	The speech mechanism
5th week 19-09-2022 to 24-09-2022	Revision/assignment 1st
6th week 26-09-2022 to 01-10-2022	Basic concepts: Phoneme, Allophone, vowel, consonant.
7th week 03-10-2022 to 08-10-2022	Consonant cluster and syllable and verbs :Link Linking Verbs ,Transitive and intransitive verbs
8th week 10-10-2022 to 15-10-2022	Description of the British R.P. speech sounds :vowels and consonants
9th week 17-10-2022 to 21-10-2022	Agreement of verbs and subject/Assignment2nd/ Test conducted
22-10-2022 to 26-10-2022	DIWALI VACATIONS
10th week 27-10-2022 to 29-10-2022	Practical work and submission of practical file
11th week 31-10-2022 to 05-11-2022	Tenses and their Use
12th week 07-11-2022 to 12-11-2022	Tag questions and revision
13th week 14-11-2022 to 19-11-2022	Transformation and confusion of Adjectives and Adverbs
14th week 21-11-2022 to 26-11-2022	Adverbial use of No, Not and None and Revision
15th week 28-11-2022 to 03-12-2022	Revision of theory
16th week 05-12-2022 to 10-12-2022	Revision of grammar
17th week 12-12-2022 to 17-12-2022	Revision



	Revision
18th week 19-12-2022 to 24-12-2022	
19th week 26-12-2022 to 27-12-2022	Revision

Note: Mention Assignments and Unit Test as per scheduled

Class: BA first year Subject: Functional English

Semester: EVEN

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Introduction of syllabus and word accent
2nd week 16-01-2023 to 21-01-2023	Accent and Rhythm in connected speech
3rd week 23-01-2023 to 28-01-2023	Difficulties with comparatives and superlatives And Revision
4th week 30-01-2023 to 04-02-2023	Confusion of participles Active and passive voice, The prop word one
5th week 06-02-2023 to 11-02-2023	prepositions/Assignments 1st and 2 nd
6th week 13-02-2023 to 18-02-2023	Revision of theory part
7th week 20-02-2023 to 25-02-2023	Intonation Tune 1&2
8th week 27-02-2023 to 04-03-2023	Redundant Pronouns and Preposition, The use Of correlatives
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Phonetic transcription simple words in Common use in IPA symbols
10th week 20-03-2023 to 25-03-2023	Use of who, whom, Much, many, still & yet, so that, so as, Make and do
11th week 27-03-2023 to 01-04-2023	Practical work and test conducted
12th week 03-04-2023 to 08-04-2023	Errors in the use of individual words, the Courtesy words: please and thank you, Greetings and salutations, Dates and Time and submission of practical file
13th week 10-04-2023 to 15-04-2023	Phonetic transcription Revision Revision of Grammar topics



14th week 17-04-2023 to 22-04-2023	Group discussion and doubt classes
	Revision of theory part
15th week 24-04-2023 to 29-04-2023	Revision of transcription
18th week 19-12-2022 to 24-12-2022	
19th week 26-12-2022 to 27-12-2022	Revision

Note: Mention Assignments and Unit Test as per scheduled



Lesson Plan for First year classes UG

Class: B.Sc.- I (Medical with Biotechnology)

Subject:

- i. Introduction to Biotechnology (BIT 101 L)
- ii. Biochemistry-I with Dr. Sonia (BIT 102 L)

Semester: Odd (I Semester)

Week	Topics
1st week 22-08-2022 to 27-08-2022	Introduction to Biotechnology: History and major landmarks- in the development of biotechnology, introduction to gene and genomes, Proteins and proteome.
2nd week 29-08-2022 to 03-09-2022	Fermentation technology: General introduction, basic technique and applications.
3rd week 05-09-2022 to 10-09-2022	Plant Tissue Culture: General introduction, basic technique and applications.
4th week 12-09-2022 to 17-09-2022	Animal Tissue Culture: General introduction, basic technique and applications.
5th week 19-09-2022 to 24-09-2022	Genetic Engineering: Introduction and history.
6th week 26-09-2022 to 01-10-2022	Recombinant DNA technology.
	Unit Test-1 (BIT 101 L) and Assignment 1 (BIT 101 L)
7th week 03-10-2022 to 08-10-2022	Genetically modified organisms (GMOs).
8th week 10-10-2022 to 15-10-2022	DNA finger printing and forensic analysis.
9th week 17-10-2022 to 21-10-2022	Applications of biotechnology: Applications of biotechnology in agriculture, animal husbandry, veterinary sciences.
22-10-2022 to 26-10-2022	DIWALI VACATIONS
10th week 27-10-2022 to 29-10-2022	Food & feed industry, chemical industry, environment, bioremediation.
11th week 31-10-2022 to 05-11-2022	Waste water treatment, solid waste management, biofuels.



12th week 07-11-2022 to 12-11-2022	Human health and medicine (Monoclonal antibodies, hybridoma technology and embryo transfer technology).
13th week 14-11-2022 to 19-11-2022	Bio-safety and Ethics: Biotechnology research in India,
14th week 21-11-2022 to 26-11-2022	Biotechnology in context of developing world.
15th week 28-11-2022 to 03-12-2022	Brief account of safety guidelines and risk assessment in biotechnology. Ethics in Biotechnology.
16th week 05-12-2022 to 10-12-2022	Nanotechnology: Introduction, history and scope (Brief account).
17th week 12-12-2022 to 17-12-2022	Intellectual property rights. Revision
18th week 19-12-2022 to 24-12-2022	Revision
19th week 26-12-2022 to 27-12-2022	Revision

Lesson Plan for First year classes UG

Class: B.Sc.- I (Medical with Biotechnology)

Subject:

- i. General Microbiology (BIT 201 L)
- ii. Biochemistry (BIT 202 L)- With Dr. Sonia

Semester: Even (II Semester)

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Introduction, Importance and Scope of Microbiology: Definition and history of microbiology, contributions of Antony van Leeuwenhoek, Louis Pasteur, Robert Koch etc.
2nd week 16-01-2023 to 21-01-2023	Branches of microbiology, Microscope Construction and working principles of different types of microscopes – compound, dark field.
3rd week 23-01-2023 to 28-01-2023	Phase contrast, Fluorescence and Electron (Scanning and transmission).



4th week 30-01-2023 to 04-02-2023	Sterilization techniques: Principles and Applications of Physical Methods, Autoclave, Hot air oven, Laminar airflow, Seitz filter, Sintered glass filter, and membrane filter.
5th week 06-02-2023 to 11-02-2023	Chemical methods; Alcohol, Aldehydes, Phenols, Halogens and Gaseous agents.
6th week 13-02-2023 to 18-02-2023	Radiation Methods: UV rays and Gamma rays.
7th week 20-02-2023 to 25-02-2023	Staining techniques: Principles of staining, types of stains – simple stains, structural stains and Differential stains. Unit Test-1 (BIT 201 L) and Assignment 1 (BIT 201 L)
8th week 27-02-2023 to 04-03-2023	Microbial Taxonomy: Concept of microbial species and strains, classification of bacteria based on – morphology (shape and flagella), cell wall, nutrition, extreme environment and 16S rRNA techniques.
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Viruses and Bacteria: Bacteria – Ultrastructure of bacteria cell (both Gram positive and Gram negative) including endospore and capsule.
10th week 20-03-2023 to 25-03-2023	Structure and classification (A brief account), Plant viruses – CaMV, Animal viruses – FMDV, Bacterial Virus – Lambda Phage.
11th week 27-03-2023 to 01-04-2023	Pathogenic Microorganisms: Bacterial diseases of man – Tetanus, Tuberculosis, Pneumonia, Cholera and Typhoid. Viral diseases: AIDS (HIV), Ebola, Swine Flu, Hepatitis, Papilloma virus.
12th week 03-04-2023 to 08-04-2023	Microbial Growth and Metabolism: Kinetics of microbial growth, growth Synchronous growth, factors affecting bacterial growth. Methods to study growth.curve.
13th week 10-04-2023 to 15-04-2023	Respiration: Glycolysis, Kreb's cycle (TCA), Oxidative Phosphorylation.



14th week 17-04-2023 to 22-04-2023	Bacterial Photosynthesis: Photosynthetic apparatus in prokaryotes, Photophosphorylation & Dark reaction. Revision
15th week 24-04-2023 to 29-04-2023	Revision

Lesson Plan for Third year classes UG

Class: B.Sc.- III (Medical with Biotechnology)

Subject:

- v. **Animal Biotechnology (BIT 601 L)**
- vi. **Bioinformatics (BIT 602 L)**
- vii. **Molecular Diagnostics (BIT 604 L)-Skill based**

Semester: Even (VI Semester)

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Animal cell and tissue culture: Introduction, principles and practice; History and development of Animal cell culture. Basics of computer and Bioinformatics: Fundamental aspects of computer and Internet in relation to bioinformatics. Enzyme Immunoassays: Comparison of enzymes available for enzyme immunoassays, conjugation of enzymes.
2nd week 16-01-2023 to 21-01-2023	Culture media: Media components, serum containing and serum free media. Database management systems (Object-oriented and relational). Solid phases used in enzyme immunoassays.
3rd week 23-01-2023 to 28-01-2023	Natural media- Plasma clot, biological fluids, tissue extracts; Growth factors required for proliferation of animal cell.



	Introduction, History, goals and Scope, applications and limitations of Bioinformatics. Homogeneous and heterogeneous enzyme immunoassays
4th week 30-01-2023 to 04-02-2023	Chemically defined media, balanced salt solution; physical requirements for growing animal cells in culture. Information Networks (EMB-NET, NIC-NET, INFLIBNET). Enzyme immunoassays after immuno blotting. Enzyme Immunohistochemical techniques.
5th week 06-02-2023 to 11-02-2023	Primary cell culture techniques: initiation of cell culture - substrate (glass, plastic, metals) their preparation and sterilization. Introduction to Genomics and genome projects – information flow in biology, DNA sequence data. Use of polyclonal or monoclonal antibodies in enzymes Immuno assays. Applications of enzyme immunoassays in diagnostic microbiology.
6th week 13-02-2023 to 18-02-2023	Isolation of tissue explants, disaggregation-enzyme disaggregation and mechanical disaggregation of the tissue, development of primary culture and cell lines, contamination in animal cell cultures. Unit Test-1 (BIT 601 L) and Assignment 1 (BIT 601 L) Experimental approach to genome sequence data, genome information resources. Molecular methods in clinical microbiology: Applications of PCR, RFLP.
7th week 20-02-2023 to 25-02-2023	Suspension culture, Growth curve of animal cells in culture. Secondary cell culture – transformed cell and continuous cell lines, Finite and infinite cell lines. Functional Proteomics – protein sequence and structural data. Nuclear hybridization methods.



8th week 27-02-2023 to 04-03-2023	<p>Cell lines: Commonly used cell lines- their organization and Characteristics. Organ Culture: technique, advantages, applications and limitations. Artificial skin. Protein information resources and secondary data bases.</p> <p>Unit Test-2 (BIT 602 L) and Assignment 2 (BIT 602 L)</p> <p>Single nucleotide and plasmid finger printing in clinical</p> <p>Microbiology Laboratory tests in chemotherapy.</p>
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	<p>Transfection of animal cells: transfection methods, Selection markers. Computational Genomics - Internet basics, biological data analysis and application, sequence data bases, NCBI model, File format. Susceptibility tests: Micro-dilution and macro-dilution broth procedures.</p> <p>Unit Test-3 (BIT 604 L) and Assignment 3 (BIT 604 L)</p>
10th week 20-03-2023 to 25-03-2023	<p>Cloning and expression of foreign genes in animal cells: Expression vectors. Over production of recombinant proteins. Protein primary sequence comparison, pairwise alignment and analysis. Susceptibility tests: Diffusion test procedures. Susceptibility tests: Tests for bactericidal activity.</p>
11th week 27-03-2023 to 01-04-2023	<p>Hybridoma Technology: Production of monoclonal antibodies and their applications. Embryo transfer technology- technique, its applications.</p>
	<p>Algorithm BLAST, Variants of BLAST, multiple sequence alignment.</p>
	<p>Automated procedures for antimicrobial susceptibility tests.</p>



12th week 03-04-2023 to 08-04-2023	Artificial insemination. Animal clones. DATA base searching using BLAST and FASTA. Automation in microbial diagnosis, rapid diagnostic approach including technical purification and standardization of antigen and specific antibodies.
13th week 10-04-2023 to 15-04-2023	Transgenic Animals: transgenic sheep, cow, pig, goat etc. Predictive methods using DNA and protein sequences (protein prediction, motif, tertiary structure). Concepts and methods in idiotypes, Antiidiotypes and molecular mimicry and receptors.
14th week 17-04-2023 to 22-04-2023	Production of transgenic mice, Gene targeting in mice, applications of gene targeting. Structural data bases – Small molecules data bases, protein information resources, protein data bank. Epitope design and applications, Immunodiagnostic tests.
15th week 24-04-2023 to 29-04-2023	Therapeutic products through genetic engineering – blood proteins, insulin, growth hormone etc. Immuno florescence, Radioimmunoassay. GLC, HPLC. Revision Gene Therapy: introduction, types of gene therapy, major achievements, problems and prospects. Stem cells in gene therapy. Electron microscopy, flow cytometry and cell sorting. Revision

Lesson Plan for Third year classes UG

Class: B.Sc.- III (Medical with Biotechnology)

Subject:

- i. Plant Biotechnology (BIT 501 L)
- ii. Microbial Biotechnology (BIT 502 L)

Semester: Odd (V Semester)

Week	Topics
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1st week 16-08-2022 to 20-08-2022	Plant Tissue Culture: Introduction, Concept, History, Scope and Applications. Plant Tissue Culture Laboratory: Layout, organization, equipments, instruments and other requirements
2nd week 22-08-2022 to 27-08-2022	Aseptic Techniques: General sanitation/cleanliness of PTC laboratory and precautions regarding maintenance of aseptic conditions, Washing, drying and sterilization of glassware, sterilization of media.
3 rd week 29-08-2022 to 03-09-2022	Culture Media: Nutritional requirements for plant tissue culture, role of different media components, plant growth regulators, different culture media viz. MS, B5 Nitsch and White's medium. In-vitro methods in plant tissue culture: Explants, their cellular characteristics, dedifferentiation and redifferentiation, cellular totipotency, organogenesis and somatic embryogenesis.
4 th week 05-09-2022 to 10-09-2022	Micropropagation, (different routes of multiplication-axillary, bud proliferation etc.), Synthetic seeds (a brief account), Meristem culture. Callus and suspension culture techniques: Introduction, principle, methodology, applications and limitations. Somaclonal variation (Brief account only)
5th week 12-09-2022 to 17-09-2022	DIWALI VACATIONS
6th week 19-09-2022 to 24-09-2022	Organ culture: Anther & Pollen culture, ovary, ovule, embryo and endosperm culture-concept, technique, applications and limitations. Protoplast culture: Protoplast isolation, viability test and its culture.
	Somatic hybridization – protoplast fusion techniques (chemical and electro-fusion), selection of hybrids, production of symmetric and asymmetric hybrids and cybrids. Practical applications of somatic hybridization.
7th week 26-09-2022 to 01-10-2022	Production of secondary metabolites in vitro: introduction, technique and utilities. Plant germplasm conservation and cryopreservation. Genetic Engineering in plants: Introduction, <i>Agrobacterium tumefaciens</i> and <i>A. rhizogenes</i> mediated transformation.



8th week 03-10-2022 to 08-10-2022	Strategies for gene transfer to plant cells. Binary and cointegrate vectors. Direct DNA transfer/Physical methods of gene transfer in plants – Introduction: Biolistic method, electroporation, liposome mediated, Calcium phosphate mediated, microinjection etc.
9th week 10-10-2022 to 15-10-2022	Transgenic Plants: Introduction and applications. Developing insect resistance, bacterial, fungal and viral disease resistance and abiotic stress tolerance in plants
10th week 17-10-2022 to 21-10-2022	Improving food quality – nutritional enhancement of plants (carbohydrates, seed storage proteins and vitamins). Plants as Bioreactors: antibodies, polymers, industrial enzymes (Brief account only), Edible vaccines. Unit Test-1 (BIT 501 L) and Assignment 1 (BIT 501 L)
22-10-2022 to 26-10-2022	Microbial Biotechnology: Historical landmarks, General concept. Screening and Isolation of Microorganisms: Industrially important microbes, their screening and isolation, enrichment culture.
11th week 27-10-2022 to 29-10-2022	Strain improvement- bacterial genetics, mutant selection, recombination, recombinant DNA technology. Strain preservation and maintenance. Nutrition and cultivation of microorganisms: Basic nutrition and metabolism, Natural and Synthetic media, Sterilization techniques
12th week 31-10-2022 to 05-11-2022	Microbial Fermenters/Bioreactors: Basic design of fermenters. Physico-chemical standards used in bioreactors (agitation, aeration, pH, temp., dissolved oxygen etc.). Types of fermenters-stirred tank, airlift etc. Fermentation types – Continuous, Batch culture, Solid state and Submerged. Quantification of growth, thermodynamics of growth, effect of different factors on growth.
13th week 07-11-2022 to 12-11-2022	Process Development and Downstream Processing: Shake flask fermentation, scale up of the process. Separation of particles, disintegration of cells, extraction, concentration, purification and drying of the products.



	Unit Test-2 (BIT 502 L) and Assignment 2 (BIT 502 L)
14th week 14-11-2022 to 19-11-2022	Microbial Products: a brief discussion about production of certain industrial products such as Alcohol, Alcoholic beverage (Beer), Organic acids (citric acid), Antibiotics (penicillin), Amino acids (glutamic acid), enzymes (protease, alpha-amylase). Microbial Foods: Single Cell Proteins. Sewage waste water treatment: Aerobic and anaerobic digestion. Bioremediation
15th week 21-11-2022 to 26-11-2022	Biodegradation of xenobiotic compounds. Biotransformation, Biomining, bioleaching, biogas production Microbial technology in agriculture- Bioinsecticides, bioherbicides, biocontrol agents for disease control, advantages over chemical methods. Biofertilizers. Revision.

Lesson Plan for First year classes UG

Class: B.Sc.- I (Medical with Biotechnology)

Subject:

- i. Introduction to Biotechnology (BIT 101 L)
- ii. Biochemistry-I with Dr. Sonia (BIT 102 L)

Semester: Odd (I Semester)

Week	Topics
1st week 22-08-2022 to 27-08-2022	Introduction to Biotechnology: History and major landmarks- in the development of biotechnology, introduction to gene and genomes, Proteins and proteome.
2nd week 29-08-2022 to 03-09-2022	Fermentation technology: General introduction, basic technique and applications.
3rd week 05-09-2022 to 10-09-2022	Plant Tissue Culture: General introduction, basic technique and applications.



4th week 12-09-2022 to 17-09-2022	Animal Tissue Culture: General introduction, basic technique and applications.
5th week 19-09-2022 to 24-09-2022	Genetic Engineering: Introduction and history.
6th week 26-09-2022 to 01-10-2022	Recombinant DNA technology.
	Unit Test-1 (BIT 101 L) and Assignment 1 (BIT 101 L)
7th week 03-10-2022 to 08-10-2022	Genetically modified organisms (GMOs).
8th week 10-10-2022 to 15-10-2022	DNA finger printing and forensic analysis.
9th week 17-10-2022 to 21-10-2022	Applications of biotechnology: Applications of biotechnology in agriculture, animal husbandry, veterinary sciences.
22-10-2022 to 26-10-2022	DIWALI VACATIONS
10th week 27-10-2022 to 29-10-2022	Food & feed industry, chemical industry, environment, bioremediation.
11th week 31-10-2022 to 05-11-2022	Waste water treatment, solid waste management, biofuels.
12th week 07-11-2022 to 12-11-2022	Human health and medicine (Monoclonal antibodies, hybridoma technology and embryo transfer technology).
13th week 14-11-2022 to 19-11-2022	Bio-safety and Ethics: Biotechnology research in India, Biotechnology in context of developing world.
14th week 21-11-2022 to 26-11-2022	Brief account of safety guidelines and risk assessment in biotechnology. Ethics in Biotechnology.
15th week 28-11-2022 to 03-12-2022	Nanotechnology: Introduction, history and scope (Brief account). Intellectual property rights.
	Revision

Lesson Plan for Third year classes UG

Class: B.Sc.- III (Medical with Biotechnology)

Subject:

- i. Animal Biotechnology (BIT 601 L)
- ii. Bioinformatics (BIT 602 L)
- iii. Molecular Diagnostics (BIT 604 L)-Skill based

Semester: Even (VI Semester)



Week	Topics
1st Week 09-01-2023 to 14-01-2023	Animal cell and tissue culture: Introduction, principles and practice; History and development of Animal cell culture. Basics of computer and Bioinformatics: Fundamental aspects of computer and Internet in relation to bioinformatics. Enzyme Immunoassays: Comparison of enzymes available for enzyme immunoassays, conjugation of enzymes.
2nd week 16-01-2023 to 21-01-2023	Culture media: Media components, serum containing and serum free media. Database management systems (Object-oriented and relational). Solid phases used in enzyme immunoassays.
3rd week 23-01-2023 to 28-01-2023	Natural media- Plasma clot, biological fluids, tissue extracts; Growth factors required for proliferation of animal cell. Introduction, History, goals and Scope, applications and limitations of Bioinformatics. Homogeneous and heterogeneous enzyme immunoassays
4th week 30-01-2023 to 04-02-2023	Chemically defined media, balanced salt solution; physical requirements for growing animal cells in culture. Information Networks (EMB-NET, NIC-NET, INFLIBNET). Enzyme immunoassays after immuno blotting. Enzyme Immunohistochemical techniques.
5th week 06-02-2023 to 11-02-2023	Primary cell culture techniques: initiation of cell culture - substrate (glass, plastic, metals) their preparation and sterilization. Introduction to Genomics and genome projects – information flow in biology, DNA sequence data. Use of polyclonal or monoclonal antibodies in enzymes Immuno assays. Applications of enzyme immunoassays in diagnostic microbiology.
6th week 13-02-2023 to 18-02-2023	Isolation of tissue explants, disaggregation- enzyme disaggregation and mechanical disaggregation of the tissue, development of primary culture and cell lines, contamination in animal cell cultures. Unit Test-1 (BIT 601 L) and Assignment 1 (BIT 601 L)



	Experimental approach to genome sequence data, genome information resources. Molecular methods in clinical microbiology: Applications of PCR, RFLP.
7th week 20-02-2023 to 25-02-2023	Suspension culture, Growth curve of animal cells in culture. Secondary cell culture – transformed cell and continuous cell lines, Finite and infinite cell lines. Functional Proteomics – protein sequence and structural data. Nuclear hybridization methods.
8th week 27-02-2023 to 04-03-2023	Cell lines: Commonly used cell lines- their organization and Characteristics. Organ Culture: technique, advantages, applications and limitations. Artificial skin. Protein information resources and secondary data bases. Unit Test-2 (BIT 602 L) and Assignment 2 (BIT 602 L) Single nucleotide and plasmid finger printing in clinical, Microbiology Laboratory tests in chemotherapy
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Transfection of animal cells: transfection methods, Selection markers. Computational Genomics - Internet basics, biological data analysis and application, sequence data bases, NCBI model, File format. Susceptibility tests: Micro-dilution and macro-dilution broth procedures. Unit Test-3 (BIT 604 L) and Assignment 3 (BIT 604 L)
10th week 20-03-2023 to 25-03-2023	Cloning and expression of foreign genes in animal cells: Expression vectors. Over production of recombinant proteins. Protein primary sequence comparison, pairwise alignment and analysis. Susceptibility tests: Diffusion test procedures. Susceptibility tests: Tests for bactericidal activity.
11th week 27-03-2023 to 01-04-2023	Hybridoma Technology: Production of monoclonal antibodies and their applications. Embryo transfer technology- technique, its applications. Algorithm BLAST, Variants of BLAST, multiple sequence alignment.



	Automated procedures for antimicrobial susceptibility tests.
12th week 03-04-2023 to 08-04-2023	Artificial insemination. Animal clones. DATA base searching using BLAST and FASTA. Automation in microbial diagnosis, rapid diagnostic approach including technical purification and standardization of antigen and specific antibodies.
13th week 10-04-2023 to 15-04-2023	Transgenic Animals: transgenic sheep, cow, pig, goat etc. Predictive methods using DNA and protein sequences (protein prediction, motif, tertiary structure). Concepts and methods in idiotypes, Antiidiotypes and molecular mimicry and receptors.
14th week 17-04-2023 to 22-04-2023	Production of transgenic mice, Gene targeting in mice, applications of gene targeting. Structural data bases – Small molecules data bases, protein information resources, protein data bank. Epitope design and applications, Immunodiagnostic tests.
	Therapeutic products through genetic engineering – blood proteins, insulin, growth hormone etc. Immuno florescence, Radioimmunoassay. GLC, HPLC. Revision
15th week 24-04-2023 to 29-04-2023	Gene Therapy: introduction, types of gene therapy, major achievements, problems and prospects. Stem cells in gene therapy. Electron microscopy, flow cytometry and cell sorting.
	Revision

Lesson Plan for First year classes UG

Class: B.Sc.- I (Medical with Biotechnology)

Subject:

- i. General Microbiology (BIT 201 L)
- ii. Biochemistry (BIT 202 L)- With Dr. Sonia

Semester: Even (II Semester)



Week	Topics
1st Week 09-01-2023 to 14-01-2023	Introduction, Importance and Scope of Microbiology: Definition and history of microbiology, contributions of Antony van Leeuwenhoek, Louis Pasteur, Robert Koch etc.
2nd week 16-01-2023 to 21-01-2023	Branches of microbiology, Microscope Construction and working principles of different types of microscopes – compound, dark field.
3rd week 23-01-2023 to 28-01-2023	Phase contrast, Fluorescence and Electron (Scanning and transmission).
4th week 30-01-2023 to 04-02-2023	Sterilization techniques: Principles and Applications of Physical Methods, Autoclave, Hot air oven, Laminar airflow, Seitz filter, Sintered glass filter, and membrane filter.
5th week 06-02-2023 to 11-02-2023	Chemical methods; Alcohol, Aldehydes, Phenols, Halogens and Gaseous agents.
6th week 13-02-2023 to 18-02-2023	Radiation Methods: UV rays and Gamma rays.
7th week 20-02-2023 to 25-02-2023	Staining techniques: Principles of staining, types of stains – simple stains, structural stains and Differential stains. Unit Test-1 (BIT 201 L) and Assignment 1 (BIT 201 L)
8th week 27-02-2023 to 04-03-2023	Microbial Taxonomy: Concept of microbial species and strains, classification of bacteria based on – morphology (shape and flagella), cell wall, nutrition, extreme environment and 16S rRNA techniques.
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Viruses and Bacteria: Bacteria – Ultrastructure of bacteria cell (both Gram positive and Gram negative) including endospore and capsule.
10th week 20-03-2023 to 25-03-2023	Structure and classification (A brief account), Plant viruses – CaMV, Animal viruses – FMDV, Bacterial Virus – Lambda Phage.
11th week 27-03-2023 to 01-04-2023	Pathogenic Microorganisms: Bacterial diseases of man – Tetanus, Tuberculosis, Pneumonia, Cholera and Typhoid.



12th week 03-04-2023 to 08-04-2023	Viral diseases: AIDS (HIV), Ebola, Swine Flu, Hepatitis, Papilloma virus.
13th week 10-04-2023 to 15-04-2023	Microbial Growth and Metabolism: Kinetics of microbial growth, growth curve.
14th week 17-04-2023 to 22-04-2023	Synchronous growth, factors affecting bacterial growth. Methods to study growth.
15th week 24-04-2023 to 29-04-2023	Respiration: Glycolysis, Kreb's cycle (TCA), Oxidative Phosphorylation.
	Bacterial Photosynthesis: Photosynthetic apparatus in prokaryotes, Photophosphorylation & Dark reaction.
	Revision

Class: B.sc 1st year

Subject: Environment studies (CYL-111)

Semester: Odd (1st Sem)

Week	Topics
1st week 22-08-2022 to 27-08-2022	The multidisciplinary nature of environmental studies definition, scope and importance, need for public awareness
2nd week 29-08-2022 to 03-09-2022	Natural resources: renewable and non-renewable resources, natural resources and associated problem, Forest resources: use and over exploitation, deforestation,
	Water resources: use and over utilization of surface and ground water, flood and drought
3rd week 05-09-2022 to 10-09-2022	Mineral resources: use and exploitation, environmental effect of extraction,



	Food resources: world food problem, changes cause by agriculture, effect of modern agriculture, fertilizer - pesticides problem, water logging, salinity
4th week 12-09-2022 to 17-09-2022	Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies; Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
5th week 19-09-2022 to 24-09-2022	Ecosystems Concept of an ecosystem, Structure and function of an ecosystem, Procedures, consumers and decomposers, Energy flow in the ecosystem
7th week 03-10-2022 to 08-10-2022	1st assignment, Food chains, food webs and ecological pyramids
8th week 10-10-2022 to 15-10-2022	Ecological succession. Biodiversity and its conservation: Introduction –Definition: genetic, species and ecosystem diversity
9th week 17-10-2022 to 21-10-2022	Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values, Biodiversity at global, National and local levels
22-10-2022 to 26-10-2022	DIWALI VACATIONS
10th week 27-10-2022 to 29-10-2022	Unit test, Biogeographical classification of India, India as a megadiversity nation
11th week 31-10-2022 to 05-11-2022	Environmental Pollution Definition, Causes, effects and control measures of: -Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution,
12th week 07-11-2022 to 12-11-2022	Thermal pollution & Nuclear hazards. Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
13th week 14-11-2022 to 19-11-2022	Social Issues and the Environment From Unsustainable to sustainable development, urban problems related to energy, Water conservation, rain water harvesting, watershed management



14th week 21-11-2022 to 26-11-2022	Resettlement and rehabilitation of people-its problems and concerns. Environmental ethics: Issues and possible solutions, Climate change, global warming, acid rain, ozone layer depletion, nuclear accident and holocaust
15th week 28-11-2022 to 03-12-2022	Wasteland reclamation, Consumerism and waste products, Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water(Prevention and control of Pollution) Act
16th week 05-12-2022 to 10-12-2022	Wildlife Protection Act, Forest Conservation Act
17th week 12-12-2022 to 17-12-2022	Issues involved in enforcement of environment legislation & Public awareness
18th week 19-12-2022 to 24-12-2022	Revision
19th week 26-12-2022 to 27-12-2022	Revision

Lesson Plan for Second year classes PG

Class:M.Sc.2nd year

Subject: Environmental science (551-a)

Semester: Odd (Sem 3rd)

Week	Topics
1st week 16-08-2022 to 20-08-2022	Environment: Definition and Scope
2nd week 22-08-2022 to 27-08-2022	A brief account of Earth's support system: Hydrosphere, lithosphere, atmosphere, biosphere
3 rd week 29-08-2022 to 03-09-2022	Concept of carrying capacity
4 th week 05-09-2022 to 10-09-2022	Assimilative capacity, carbon and ecological footprint
5th week 12-09-2022 to 17-09-2022	Major human cultural changes: agricultural and industrial revolution in relation to their environmental impacts
6th week 19-09-2022 to 24-09-2022	Urbanization, urban sprawl and related environmental problems
7th week 26-09-2022 to 01-10-2022	Concept of green building, thermal, comfort and eco-cities
8th week 03-10-2022 to 08-10-2022	Concept of sustainability principles



9th week 10-10-2022 to 15-10-2022	1st Assignment, strategies of sustainable development
10th week 17-10-2022 to 21-10-2022	Human population and environment
22-10-2022 to 26-10-2022	DIWALI VACATIONS
11th week 27-10-2022 to 29-10-2022	Unit test, Historical and present global trends of population growth Human demography: fertility, birth rates, mortality rates
12th week 31-10-2022 to 05-11-2022	Life expectancy, doubling time, zero population growth
13th week 07-11-2022 to 12-11-2022	Demographic transition (case studies: China and India)
14th week 14-11-2022 to 19-11-2022	Population explosion and related environmental problems
15th week 21-11-2022 to 26-11-2022	Environmental consumerism, green consumerism
16th week 28-11-2022 to 03-12-2022	Environmentalism, human-centric views of development
17th week 05-12-2022 to 07-12-2022	2 nd assignment, earth-centric views of development National environment policy- salient features

Lesson Plan for First year classes UG

Class: B.Sc.- I (Medical with Biotechnology)

Subject:

- i. Introduction to Biotechnology (BIT 101 L)
- ii. Biochemistry-I with Dr. Sonia (BIT 102 L)

Week	Topics
1st week 22-08-2022 to 27-08-2022	Introduction to Biotechnology: History and major landmarks- in the development of biotechnology, introduction to gene and genomes, Proteins and proteome.
2nd week 29-08-2022 to 03-09-2022	Fermentation technology: General introduction, basic technique and applications.



3rd week 05-09-2022 to 10-09-2022	Plant Tissue Culture: General introduction, basic technique and applications.
4th week 12-09-2022 to 17-09-2022	Animal Tissue Culture: General introduction, basic technique and applications.
5th week 19-09-2022 to 24-09-2022	Genetic Engineering: Introduction and history.
6th week 26-09-2022 to 01-10-2022	Recombinant DNA technology. Unit Test-1 (BIT 101 L) and Assignment 1 (BIT 101 L)
7th week 03-10-2022 to 08-10-2022	Genetically modified organisms (GMOs).
8th week 10-10-2022 to 15-10-2022	DNA finger printing and forensic analysis.
9th week 17-10-2022 to 21-10-2022	Applications of biotechnology: Applications of biotechnology in agriculture, animal husbandry, veterinary sciences.
22-10-2022 to 26-10-2022	DIWALI VACATIONS
10th week 27-10-2022 to 29-10-2022	Food & feed industry, chemical industry, environment, bioremediation.
11th week 31-10-2022 to 05-11-2022	Waste water treatment, solid waste management, biofuels.
12th week 07-11-2022 to 12-11-2022	Human health and medicine (Monoclonal antibodies, hybridoma technology and embryo transfer technology).
13th week 14-11-2022 to 19-11-2022	Bio-safety and Ethics: Biotechnology research in India, Biotechnology in context of developing world.
14th week 21-11-2022 to 26-11-2022	Brief account of safety guidelines and risk assessment in biotechnology. Ethics in Biotechnology.
15th week 28-11-2022 to 03-12-2022	Nanotechnology: Introduction, history and scope (Brief account). Intellectual property rights. Revision
16th week 05-12-2022 to 10-12-2022	Revision
17th week 12-12-2022 to 17-12-2022	Revision
18th week 19-12-2022 to 24-12-2022	Revision



19th week 26-12-2022 to 27-12-2022	Revision
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Lesson Plan for First year classes UG

Class: B.Sc.- I (Medical with Biotechnology)

Subject:

- i. General Microbiology (BIT 201 L)
- ii. Biochemistry (BIT 202 L)- With Dr. Sonia

Semester: Even (II Semester)

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Introduction, Importance and Scope of Microbiology: Definition and history of microbiology, contributions of Antony van Leeuwenhoek, Louis Pasteur, Robert Koch etc.
2nd week 16-01-2023 to 21-01-2023	Branches of microbiology, Microscope Construction and working principles of different types of microscopes – compound, dark field.
3rd week 23-01-2023 to 28-01-2023	Phase contrast, Fluorescence and Electron (Scanning and transmission).
4th week 30-01-2023 to 04-02-2023	Sterilization techniques: Principles and Applications of Physical Methods, Autoclave, Hot air oven, Laminar airflow, Seitz filter, Sintered glass filter, and membrane filter.
5th week 06-02-2023 to 11-02-2023	Chemical methods; Alcohol, Aldehydes, Phenols, Halogens and Gaseous agents.
6th week 13-02-2023 to 18-02-2023	Radiation Methods: UV rays and Gamma rays.
7th week 20-02-2023 to 25-02-2023	Staining techniques: Principles of staining, types of stains – simple stains, structural stains and Differential stains.
	Unit Test-1 (BIT 201 L) and Assignment 1 (BIT 201 L)



8th week 27-02-2023 to 04-03-2023	Microbial Taxonomy: Concept of microbial species and strains, classification of bacteria based on – morphology (shape and flagella), cell wall, nutrition, extreme environment and 16S RNA techniques.
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Viruses and Bacteria: Bacteria – Ultrastructure of bacteria cell (both Gram positive and Gram negative) including endospore and capsule. Viruses –
10th week 20-03-2023 to 25-03-2023	Structure and classification (A brief account), Plant viruses – CaMV, Animal viruses – FMDV, Bacterial Virus – Lambda Phage.
11th week 27-03-2023 to 01-04-2023	Pathogenic Microorganisms: Bacterial diseases of man – Tetanus, Tuberculosis, Pneumonia, Cholera and Typhoid.
12th week 03-04-2023 to 08-04-2023	Viral diseases: AIDS (HIV), Ebola, Swine Flu, Hepatitis, Papilloma virus.
13th week 10-04-2023 to 15-04-2023	Microbial Growth and Metabolism: Kinetics of microbial growth, growth curve.
14th week 17-04-2023 to 22-04-2023	Synchronous growth, factors affecting bacterial growth. Methods to study growth. Respiration: Glycolysis, Kreb's cycle (TCA), Oxidative Phosphorylation.
15th week 24-04-2023 to 29-04-2023	Bacterial Photosynthesis: Photosynthetic apparatus in prokaryotes, Photophosphorylation & Dark reaction. Revision

Lesson Plan for Third year classes UG



Class: B.Sc.- III (Medical with Biotechnology)

Subject:

- i. Plant Biotechnology (BIT 501 L)
- ii. Microbial Biotechnology (BIT 502 L)

Semester: Odd (V Semester)

Week	Topics
1st week 16-08-2022 to 20-08-2022	Plant Tissue Culture: Introduction, Concept, History, Scope and Applications. Plant Tissue Culture Laboratory: Layout, organization, equipments, instruments and other requirements
2nd week 22-08-2022 to 27-08-2022	Aseptic Techniques: General sanitation/cleanliness of PTC laboratory and precautions regarding maintenance of aseptic conditions, Washing, drying and sterilization of glassware, sterilization of media.
3 rd week 29-08-2022 to 03-09-2022	Culture Media: Nutritional requirements for plant tissue culture, role of different media components, plant growth regulators, different culture media viz. MS, B5 Nitsch and White's medium. In-vitro methods in plant tissue culture: Explants, their cellular characteristics, dedifferentiation and redifferentiation, cellular totipotency, organogenesis and somatic embryogenesis.
4 th week 05-09-2022 to 10-09-2022	Micropropagation, (different routes of multiplication-axillary, bud proliferation etc.), Synthetic seeds (a brief account), Meristem culture. Callus and suspension culture techniques: Introduction, principle, methodology, applications and limitations. Somaclonal variation (Brief account only)
5th week 12-09-2022 to 17-09-2022	Organ culture: Anther & Pollen culture, ovary, ovule, embryo and endosperm culture-concept, technique, applications and limitations. Protoplast culture: Protoplast isolation, viability test and its culture.



6th week 19-09-2022 to 24-09-2022	Somatic hybridization – protoplast fusion techniques (chemical and electro-fusion), selection of hybrids, production of symmetric and asymmetric hybrids and cybrids. Practical applications of somatic hybridization.
7th week 26-09-2022 to 01-10-2022	Production of secondary metabolites in vitro: introduction, technique and utilities. Plant germplasm conservation and cryopreservation. Genetic Engineering in plants: Introduction, <i>Agrobacterium tumefaciens</i> and <i>A. rhizogenes</i> mediated transformation.
8th week 03-10-2022 to 08-10-2022	Strategies for gene transfer to plant cells. Binary and cointegrate vectors. Direct DNA transfer/Physical methods of gene transfer in plants – Introduction: Biolistic method, electroporation, liposome mediated, Calcium phosphate mediated, microinjection etc.
9th week 10-10-2022 to 15-10-2022	Transgenic Plants: Introduction and applications.
	Developing insect resistance, bacterial, fungal and viral disease resistance and abiotic stress tolerance in plants
10th week 17-10-2022 to 21-10-2022	Improving food quality – nutritional enhancement of plants (carbohydrates, seed storage proteins and vitamins). Plants as Bioreactors: antibodies, polymers, industrial enzymes (Brief account only), Edible vaccines.
	Unit Test-1 (BIT 501 L) and Assignment 1 (BIT 501 L)
22-10-2022 to 26-10-2022	DIWALI VACATIONS
11th week 27-10-2022 to 29-10-2022	Microbial Biotechnology: Historical landmarks, General concept. Screening and Isolation of Microorganisms: Industrially important microbes, their screening and isolation, enrichment culture.
12th week 31-10-2022 to 05-11-2022	Strain improvement- bacterial genetics, mutant selection, recombination, recombinant DNA technology. Strain preservation and maintenance.



	Nutrition and cultivation of microorganisms: Basic nutrition and metabolism, Natural and Synthetic media, Sterilization techniques
13th week 07-11-2022 to 12-11-2022	Microbial Fermenters/Bioreactors: Basic design of fermenters. Physico-chemical standards used in bioreactors (agitation, aeration, pH, temp., dissolved oxygen etc.). Types of fermenters-stirred tank, airlift etc.
14th week 14-11-2022 to 19-11-2022	Fermentation types – Continuous, Batch culture, Solid state and Submerged. Quantification of growth, thermodynamics of growth, effect of different factors on growth.
15th week 21-11-2022 to 26-11-2022	Process Development and Downstream Processing: Shake flask fermentation, scale up of the process. Separation of particles, disintegration of cells, extraction, concentration, purification and drying of the products. Unit Test-2 (BIT 502 L) and Assignment 2 (BIT 502 L)
16th week 28-11-2022 to 03-12-2022	Microbial Products: a brief discussion about production of certain industrial products such as Alcohol, Alcoholic beverage (Beer), Organic acids (citric acid), Antibiotics (penicillin), Amino acids (glutamic acid), enzymes (protease, alpha-amylase). Microbial Foods: Single Cell Proteins. Sewage waste water treatment: Aerobic and anaerobic digestion. Bioremediation
17th week 05-12-2022 to 07-12-2022	Biodegradation of xenobiotic compounds. Biotransformation, Biomining, bioleaching, biogas production Microbial technology in agriculture- Bioinsecticides, bioherbicides, biocontrol agents for disease control, advantages over chemical methods. Biofertilizers. Revision



Lesson Plan for Third year classes UG

Class: B.Sc.- III (Medical with Biotechnology)

Subject:

- i. Animal Biotechnology (BIT 601 L)
- ii. Bioinformatics (BIT 602 L)
- iii. Molecular Diagnostics (BIT 604 L)-Skill based

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Animal cell and tissue culture: Introduction, principles and practice; History and development of Animal cell culture. Basics of computer and Bioinformatics: Fundamental aspects of computer and Internet in relation to bioinformatics. Enzyme Immunoassays: Comparison of enzymes available for enzyme immunoassays, conjugation of enzymes.
2nd week 16-01-2023 to 21-01-2023	Culture media: Media components, serum containing and serum free media. Database management systems (Object-oriented and relational). Solid phases used in enzyme immunoassays.
3rd week 23-01-2023 to 28-01-2023	Natural media- Plasma clot, biological fluids, tissue extracts; Growth factors required for proliferation of animal cell. Introduction, History, goals and Scope, applications and limitations of Bioinformatics. Homogeneous and heterogeneous enzyme immunoassays
4th week 30-01-2023 to 04-02-2023	Chemically defined media, balanced salt solution; physical requirements for growing animal cells in culture. Information Networks (EMB-NET, NIC-NET, INFLIBNET). Enzyme immunoassays after immuno blotting. Enzyme Immunohistochemical techniques.



5th week 06-02-2023 to 11-02-2023	Primary cell culture techniques: initiation of cell culture - substrate (glass, plastic, metals) their preparation and sterilization. Introduction to Genomics and genome projects – information flow in biology, DNA sequence data. Use of polyclonal or monoclonal antibodies in enzymes Immuno assays. Applications of enzyme immunoassays in diagnostic microbiology.
6th week 13-02-2023 to 18-02-2023	<p>Isolation of tissue explants, disaggregation-enzyme disaggregation and mechanical disaggregation of the tissue, development of primary culture and cell lines, contamination in animal cell cultures.</p> <p>Unit Test-1 (BIT 601 L) and Assignment 1 (BIT 601 L)</p> <p>Experimental approach to genome sequence data, genome information resources. Molecular methods in clinical microbiology: Applications of PCR, RFLP.</p>
7th week 20-02-2023 to 25-02-2023	<p>Suspension culture, Growth curve of animal cells in culture. Secondary cell culture – transformed cell and continuous cell lines, Finite and infinite cell lines. Functional Proteomics – protein sequence and structural data.</p> <p>Nuclear hybridization methods.</p>
8th week 27-02-2023 to 04-03-2023	<p>Cell lines: Commonly used cell lines- their organization and Characteristics. Organ Culture: technique, advantages, applications and limitations. Artificial skin. Protein information resources and secondary data bases.</p> <p>Unit Test-2 (BIT 602 L) and Assignment 2 (BIT 602 L)</p> <p>Single nucleotide and plasmid finger printing in clinical</p> <p>Microbiology Laboratory tests in chemotherapy.</p>
05-03-2023 to 12-03-2023	HOLI VACATIONS



<p>9th week 13-03-2023 to 18-03-2023</p>	<p>Transfection of animal cells: transfection methods, Selection markers. Computational Genomics - Internet basics, biological data analysis and application, sequence data bases, NCBI model, File format. Susceptibility tests: Micro-dilution and macro-dilution broth procedures.</p> <p>Unit Test-3 (BIT 604 L) and Assignment 3 (BIT 604 L)</p>
<p>10th week 20-03-2023 to 25-03-2023</p>	<p>Cloning and expression of foreign genes in animal cells: Expression vectors. Over production of recombinant proteins. Protein primary sequence comparison, pairwise alignment and analysis. Susceptibility tests: Diffusion test procedures. Susceptibility tests: Tests for bactericidal activity.</p>
<p>11th week 27-03-2023 to 01-04-2023</p>	<p>Hybridoma Technology: Production of monoclonal antibodies and their applications. Embryo transfer technology- technique, its applications.</p> <p>Algorithm BLAST, Variants of BLAST, multiple sequence alignment.</p> <p>Automated procedures for antimicrobial susceptibility tests.</p>
<p>12th week 03-04-2023 to 08-04-2023</p>	<p>Artificial insemination. Animal clones. DATA base searching using BLAST and FASTA. Automation in microbial diagnosis, rapid diagnostic approach including technical purification and standardization of antigen and specific antibodies.</p>
<p>13th week 10-04-2023 to 15-04-2023</p>	<p>Transgenic Animals: transgenic sheep, cow, pig, goat etc. Predictive methods using DNA and protein sequences (protein prediction, motif, tertiary structure). Concepts and methods in idiotypes, Antiidiotypes and molecular mimicry and receptors.</p>



14th week 17-04-2023 to 22-04-2023	Production of transgenic mice, Gene targeting in mice, applications of gene targeting. Structural data bases – Small molecules data bases, protein information resources, protein data bank. Epitope design and applications, Immunodiagnostic tests. Therapeutic products through genetic engineering – blood proteins, insulin, growth hormone etc.
15th week 24-04-2023 to 29-04-2023	Immuno florescence, Radioimmunoassay. GLC, HPLC.
	Gene Therapy: introduction, types of gene therapy, major achievements, problems and prospects. Stem cells in gene therapy. Electron microscopy, flow cytometry and cell sorting.
	Revision

Lesson Plan for first year classes UG/PG

Class: BSc 1st Biotechnology
Subject: Biochemistry - I Paper II
(BIT 102L)
Semester: Odd

Week	Topics
1st week 22-08-2022 to 27-08-2022	Introduction of Syllabus; Unit 1- Introduction, History and major landmarks in the development of biochemistry, Chemical foundations of life- biomolecules and biological chemistry; Interactions in biological systems: Intra and intermolecular forces
2nd week 29-08-2022 to 03-09-2022	Unit 1- Electrostatic and hydrogen bonds, disulfide bridges, hydrophobic and hydrophilic molecules and forces; Water and weak interactions, pH and buffers
3rd week 05-09-2022 to 10-09-2022	Unit 1- Carbohydrates: Structure, Function and properties of biologically important monosaccharides, disaccharides and polysaccharides
4th week 12-09-2022 to 17-09-2022	Unit 1- Homo and heteropolysaccharides; Mucopolysaccharides



5th week 19-09-2022 to 24-09-2022	Unit 1- Bacterial cell wall polysaccharides; Glycoproteins and their biological functions Recapitulation of Unit 1
6th week 26-09-2022 to 01-10-2022	Unit 2- Amino acids and proteins: Essential amino acids, rare and non protein amino acids
7th week 03-10-2022 to 08-10-2022	Unit 2- Structure and properties of amino acids; acid base titration/ zwitterions; pKa value and titration curve
8th week 10-10-2022 to 15-10-2022	Unit 2- Proteins: peptide bond; Structure and function of biologically important peptides; Types of proteins and their classification;
9th week 17-10-2022 to 21-10-2022	Unit 2- Forces stabilizing protein structure and shapes; Different level of structural organization of proteins;
22-10-2022 to 26-10-2022	DIWALI VACATIONS
10th week 27-10-2022 to 29-10-2022	Recapitulation of Unit 2; Assignment and viva voce
11th week 31-10-2022 to 05-11-2022	Unit -3 Lipids: Introduction and classification – simple and complex lipids;
12th week 07-11-2022 to 12-11-2022	Fatty acids – structure and nomenclature, soap value , acid value , iodine number, rancidity;
13th week 14-11-2022 to 19-11-2022	Unit -3 Essential fatty acids- a general account of structure and function of triacylglycerols; Phospholipids, Glycolipids; Recapitulation of Unit 3; Unit test – Unit 1
14th week 21-11-2022 to 26-11-2022	Unit-4- Nucleotide and nucleic acid : Building blocks, bases, sugars and phosphates; structure and nomenclature of nucleosides and nucleotides, polynucleotides, DNA (A, B and Z DNA) and RNA (rRNA, mRNA, tRNA)
15th week 28-11-2022 to 03-12-2022	Unit 4- Properties of DNA- absorption, denaturation, renaturation, hybridization
16th week 05-12-2022 to 10-12-2022	Unit 4- Tm/Cot values, Biological importance of ATP and GTP; Recapitulation of Unit 4;
17th week 12-12-2022 to 17-12-2022	Recapitulation of whole syllabus



Class: BSc I Biotechnology
Subject: Biochemistry II Paper V (BIT 202L)
Semester: EVEN

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Introduction of Syllabus; Unit 1- Enzymes: Introduction, active site, energy of activation
2nd week 16-01-2023 to 21-01-2023	Unit 1- Transition state hypothesis, lock and key hypothesis, induced fit hypothesis; Enzyme classification; Enzyme kinetics- Hyperbolic curve, Km, Vmax, MM equation
3rd week 23-01-2023 to 28-01-2023	Unit 1- Lineweaver Burk Plot/Double reciprocal plot; Effect of pH and temperature on enzyme activity
4th week 30-01-2023 to 04-02-2023	Unit 1- Enzyme inhibition- Competitive, non competitive and uncompetitive inhibition; Allosteric enzymes – A brief Account
5th week 06-02-2023 to 11-02-2023	Unit 3- Metabolism: General introduction, Catabolism and anabolism, Bioenergetics
6th week 13-02-2023 to 18-02-2023	Unit 3- Carbohydrate Metabolism: Glycolysis, Tricarboxylic acid cycle
7th week 20-02-2023 to 25-02-2023	Unit 3- Gluconeogenesis, Glycogenolysis
8th week 27-02-2023 to 04-03-2023	Unit 3- Glycogen synthesis, Regulation of all cycles of metabolism
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Unit 3- Continued Regulation of all cycles of metabolism; Recapitulation of Unit 2; Assignment and Viva voce
10th week 20-03-2023 to 25-03-2023	Unit 4- Lipid Metabolism: β oxidation of saturated Fatty acids, Degradation of triacylglycerols
11th week 27-03-2023 to 01-04-2023	Recapitulation of Unit 1; Unit test – Unit 1 Unit 4- Amino acid Metabolism: Transamination, Oxidative deamination



12th week 03-04-2023 to 08-04-2023	Unit 4- Amino acid Metabolism: Decarboxylation reaction in context of Amino acid degradation; Recapitulation of Unit 4; Unit 2- Vitamins: Introduction , Types of Vitamins;
13th week 10-04-2023 to 15-04-2023	Unit 2- Structure of water soluble vitamins and their coenzyme derivatives
14th week 17-04-2023 to 22-04-2023	Unit 2- Continued Structure of water soluble vitamins and their coenzyme derivatives; Fat soluble vitamins ; Deficiency symptoms and dietary sources; Hormones- Steroid hormones: structure and importance
15th week 24-04-2023 to 29-04-2023	Unit 2- Peptide hormones: structure and function of important peptide hormones; Recapitulation of Unit 2 Recapitulation of whole syllabus

Lesson Plan for Second and Third year classes UG / Second year classes PG

Class: BSc Biotechnology

Subject: Bio-analytical Techniques Paper VIII (BIT 302L)

Semester: Odd

Class:MSc Final year

Subject: Partial Differential equation

Semester: Odd

Week	Topics
1st week 16-08-2022 to 20-08-2022	Solution of Partial Differential Equations Transport Equation-Initial value Problem.
2nd week 22-08-2022 to 27-08-2022	Non homogeneous Equation. Laplace's Equation-Fundamental Solution
3 rd week 29-08-2022 to 03-09-2022	Mean Value formula ,properties of Harmonic Functions,
4 th week 05-09-2022 to 10-09-2022	Green's function ,Energy method
5th week 12-09-2022 to 17-09-2022	Wave Equation-Solution by Spherical Means,
6th week 19-09-2022 to 24-09-2022	Non homogeneous equations , Energy method
7th week 26-09-2022 to 01-10-2022	Poisson's formula, Kirchoff's formula, D. Alembert's formula,



8th week 03-10-2022 to 08-10-2022	uniqueness of solution domain of dependence of solution (ASSIGNMENT)
9th week 10-10-2022 to 15-10-2022	Heat Equation-Fundamental Solution, Solution of initial value problem, non homogeneous equations , Mean value formula
10th week 17-10-2022 to 21-10-2022	Nonlinear First Order PDE-Complete Integrals, Envelopes, Characteristics, Hamilton-Jacobi
22-10-2022 to 26-10-2022	DIWALI VACATIONS
11th week 27-10-2022 to 29-10-2022	Hamilton's ODE, Hopf-Lax Formula, Weak Solutions, Uniqueness.(UNIT TEST)
12th week 31-10-2022 to 05-11-2022	Representation of Solutions-Separation of Variables, Similarity Solutions (Plane and Travelling
13th week 07-11-2022 to 12-11-2022	Waves, Solitons, Similarity under Scaling) Fourier transformation
14th week 14-11-2022 to 19-11-2022	Laplace transformation
15th week 21-11-2022 to 26-11-2022	Hopf cole transofrm, Hodograph and Legendre transform
16th week 28-11-2022 to 03-12-2022	Potential function
17th week 05-12-2022 to 07-12-2022	REVISION

Class:M.sc mathematics final year

Subject: Functional Analysis

Semester: Even (4th)

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Normed linear spaces, metric on normed linear spaces,
2nd week 16-01-2023 to 21-01-2023	Holder's and Minkowski's inequality, completeness of quotient spaces of normed linear spaces. Completeness of IP, LP space



3rd week 23-01-2023 to 28-01-2023	Completeness of \mathbb{R}^n , \mathbb{C}^n and $C[a, b]$. Bounded linear transformation. Equivalent formulation of continuity.
4th week 30-01-2023 to 04-02-2023	Conjugate linear functional, conjugate spaces
5th week 06-02-2023 to 11-02-2023	Hahn Banach extension theorem (Real and Complex form), Riesz Representation theorem for bounded linear functionals on LP and $C[a, b]$.
6th week 13-02-2023 to 18-02-2023	Second Conjugate spaces, Reflexive spaces, uniform boundedness principle and its consequence,
7th week 20-02-2023 to 25-02-2023	open mapping theorem and its application projections, closed graph theorem. (ASSIGNMENT)
8th week 27-02-2023 to 04-03-2023	Equivalent norms, weak and strong convergence, their equivalence in finite dimensional spaces
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Compact operators and its relation with continuous operators, compactness of linear transformation on a finite dimensional space
10th week 20-03-2023 to 25-03-2023	properties of compact operators, compactness of the limit of the sequence of compact operators.
11th week 27-03-2023 to 01-04-2023	Revision Doubt classes Unit test
12th week 03-04-2023 to 08-04-2023	Inner product spaces, Hilbert spaces, Schwarz's inequality
13th week 10-04-2023 to 15-04-2023	Hilbert space as normed linear space, convex sets in Hilbert spaces. Projection theorem, orthonormal sets
14th week 17-04-2023 to 22-04-2023	Bessel's inequality, Parseval's identity, Conjugate of a Hilbert space.
15th week 24-04-2023 to 29-04-2023	Revision

Class: MSc final

Subject: Analytic number theory

Semester: Odd

1st week 16-08-2022 to 20-08-2022	Primes in certain arithmetical progressions.
2nd week 22-08-2022 to 27-08-2022	Fermat numbers and Mersenne numbers
3 rd week 29-08-2022 to 03-09-2022	Approximation of irrational numbers by rationals
4 th week 05-09-2022 to 10-09-2022	Hurwitz's theorem, irrationality of e and π



5th week 12-09-2022 to 17-09-2022	System of linear congruences Chinese Remainder Theorem.
6th week 19-09-2022 to 24-09-2022	Quadratic residues and non-residues. Legendre's Symbol.
7th week 26-09-2022 to 01-10-2022	Gauss Lemma and its applications.(ASSIGNMENT)
8th week 03-10-2022 to 08-10-2022	Quadratic Law of Reciprocity jacobi's Symbol.
9th week 10-10-2022 to 15-10-2022	Riemann Zeta Function and its convergence
10th week 17-10-2022 to 21-10-2022	Application in prime numbers. zeta(s) as Euler's product. Evaluation of $\zeta(2)$ and $\zeta(2k)$. Dirichlet series with simple properties
22-10-2022 to 26-10-2022	DIWALI VACATIONS
11th week 27-10-2022 to 29-10-2022	Dirichlet series as analytic function and its derivative Eulers products. Introduction to modular forms. (UNIT TEST)
12th week 31-10-2022 to 05-11-2022	Euler's summation formula and some elementary asymptotic formula.
13th week 07-11-2022 to 12-11-2022	Average order of the arithmetical functions $d(n)$, $\sigma(n)$, $\phi(n)$, $\mu(n)$ and $L_v(n)$.
14th week 14-11-2022 to 19-11-2022	Partial sums of a Dirichlet product and their application to $\phi(n)$ and $L_v(n)$
15th week 21-11-2022 to 26-11-2022	Chebyshev's functions $Y(x)$ and $n(x)$ and relation between $\psi(x)$ and $\psi_v(x)$. Shapiro's Tauberian theorem and its applications.
16th week 28-11-2022 to 03-12-2022	Shapiro's Tauberian theorem and its applications. Partial sums of the Mobius function. Selberg's asymptotic formula.
17th week 05-12-2022 to 07-12-2022	REVISION

Class: M.Sc Mathematics final year
Subject: Integral equation
Semester: Even

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Definition of Integral Equations and their classification. Relation between integral and differential equations



2nd week 16-01-2023 to 21-01-2023	Fredholm integral equations of second kind with separable kernels. Eigen Values and Eigen functions
3rd week 23-01-2023 to 28-01-2023	Reduction to a system of algebraic equations. An approximate Method. Method of successive approximations. Iterative scheme
4th week 30-01-2023 to 04-02-2023	Condition of convergence and uniqueness of series solution. Resolvent kernel and its results. Fredholm theorems.
5th week 06-02-2023 to 11-02-2023	Solution of Volterra's integral equations by iterative scheme.
6th week 13-02-2023 to 18-02-2023	Successive approximation. Resolvent kernel.
7th week 20-02-2023 to 25-02-2023	Integral transform methods: Fourier transform, Laplace transform,
8th week 27-02-2023 to 04-03-2023	Convolution integral, Application to Volterra integral equations with Convolution type kernels
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Abel's equations.
	ASSIGNMENT
	UNIT TEST
10th week 20-03-2023 to 25-03-2023	Symmetric kernel. Complex Hilbert space. Orthonormal system of functions,
11th week 27-03-2023 to 01-04-2023	Fundamental properties of eigen values and eigen functions for symmetric kernels. Expansion in eigen function and bilinear form,
12th week 03-04-2023 to 08-04-2023	Hilbert Schmidt theorem, Solution of integral equations with
	symmetric kernels
13th week 10-04-2023 to 15-04-2023	Singular Integral Equations - Inversion formula for singular integral equation with kernel of type $(h(s) - h(t) - a, 0 < a < 1)$. Dirac Delta Function.
14th week 17-04-2023 to 22-04-2023	Green's function approach to reduce
	boundary value problems of a self-adjoint differential equation with homogeneous boundary conditions to integral equation forms.
15th week 24-04-2023 to 29-04-2023	Auxiliary problem satisfied by Green's function. Modified Green's function.



	REVISION
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Class: MSc first year mathematics

Subject: Algebra

Semester: Odd

Week	Topics
1st week 22-08-2022 to 27-08-2022	Zassenhaus's lemma,
2nd week 29-08-2022 to 03-09-2022	Normal and subnormal series, Schreier's Theorem
3rd week 05-09-2022 to 10-09-2022	Holder theorem. Commutators and their properties. Three subgroup lemma of P.Hall
4th week 12-09-2022 to 17-09-2022	central series, Nilpotent groups
5th week 19-09-2022 to 24-09-2022	Upper and lower central series and their properties
6th week 26-09-2022 to 01-10-2022	Normal series and chief series, solvable groups
7th week 03-10-2022 to 08-10-2022	derived series, Field theory, Prime field (Assignment)
8th week 10-10-2022 to 15-10-2022	Extension field, Algebraic and transcendental extension
9th week 17-10-2022 to 21-10-2022	Algebraically closed field, conjugate elements,
22-10-2022 to 26-10-2022	DIWALI VACATIONS
10th week 27-10-2022 to 29-10-2022	Normal extension, separable and inseparable extension
11th week 31-10-2022 to 05-11-2022	perfect fields, construction with ruler and compass, finite field, (UNIT TEST)
12th week 07-11-2022 to 12-11-2022	Roots of unity, cyclotomic polynomials, Primitive elements
13th week 14-11-2022 to 19-11-2022	automorphism of extension, Galois extension,
14th week 21-11-2022 to 26-11-2022	fundamental theorem of Galois theory, Solutions of polynomial equation by radicals
15th week 28-11-2022 to 03-12-2022	Insolvability of general equation of degree 5 by radicals



16th week 05-12-2022 to 10-12-2022	Revision
17th week 12-12-2022 to 17-12-2022	Revision
18th week 19-12-2022 to 24-12-2022	Revision
19th week 26-12-2022 to 27-12-2022	Revision

Class: MSc first year
Subject: Abstract algebra
Semester: EVEN

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Canonical Forms-Similarity of linear transformations.
2nd week 16-01-2023 to 21-01-2023	Invariant subspaces. Reduction to triangular forms.
3rd week 23-01-2023 to 28-01-2023	Nilpotent transformations. Index of nilpotency.
4th week 30-01-2023 to 04-02-2023	Invariants of a nilpotent transformation
5th week 06-02-2023 to 11-02-2023	The primary decomposition theorem. Jordan blocks and Jordan forms.
6th week 13-02-2023 to 18-02-2023	Jordan blocks and Jordan forms. Rational canonical forms
7th week 20-02-2023 to 25-02-2023	Generalized canonical form over any field (ASSIGNMENT)
8th week 27-02-2023 to 04-03-2023	Cyclic modules. Free modules. Simple modules.
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Semi-simple modules. Schur's Lemma.
10th week 20-03-2023 to 25-03-2023	Noetherian and Artinian modules,
	Noetherian and Artinian rings
11th week 27-03-2023 to 01-04-2023	Hilbert basis theorem. (UNIT TEST)
12th week 03-04-2023 to 08-04-2023	Wedderburn-Artin theorem. Uniform modules, primary modules, and Noether-Lasker



	theorem.
13th week 10-04-2023 to 15-04-2023	Smith normal form over a principal ideal domain and rank.
14th week 17-04-2023 to 22-04-2023	Fundamental structure theorem for finitely generated abelian groups and its application to finitely generated Abelian groups
15th week 24-04-2023 to 29-04-2023	Revision

Class: MSc first year

Subject: ODE

Semester: Odd

Week	Topics
1st week 22-08-2022 to 27-08-2022	Initial-value problem and the equivalent integral equation, ϵ -approximate solution,
2nd week 29-08-2022 to 03-09-2022	cauchy-Euler construction of an ϵ -approximation theorem Equicontinuous family of functions, Ascoli-Arzela theorem.
3rd week 05-09-2022 to 10-09-2022	cauchy -peano existence theorem, Uniqueness of solutions, Lipschitz condition
4th week 12-09-2022 to 17-09-2022	Picard-Lindelof theorem for local existence and uniqueness of solutions, solution of initial-value problems by Picard method.
5th week 19-09-2022 to 24-09-2022	Approximate methods of solving first-order equations: Power Series Methods, Numerical Methods.
6th week 26-09-2022 to 01-10-2022	Continuation of solutions, Maximum interval of existence, Extension theorem, Dependence of solutions on initial conditions and function.
7th week 03-10-2022 to 08-10-2022	Matrix method for homogeneous first order systems, nth order equation (ASSIGNMENT)
8th week 10-10-2022 to 15-10-2022	Total differential equations: Condition of integrability,
9th week 17-10-2022 to 21-10-2022	Methods of Solution. Gronwall's differential inequality



22-10-2022 to 26-10-2022	DIWALI VACATIONS
10th week 27-10-2022 to 29-10-2022	Comparison theorems involving differential inequalities. (UNIT TEST)
11th week 31-10-2022 to 05-11-2022	Zeros of solutions, Sturm's separation and comparison theorems
12th week 07-11-2022 to 12-11-2022	Oscillatory and nonoscillatory equations, Riccati's equation and its solution
13th week 14-11-2022 to 19-11-2022	Pruffer transformation
14th week 21-11-2022 to 26-11-2022	Lagrange's identity and Green's formula for second-order equation
15th week 28-11-2022 to 03-12-2022	Sturm-Liouville boundary value problems
16th week 05-12-2022 to 10-12-2022	REVISION
17th week 12-12-2022 to 17-12-2022	REVISION
18th week 19-12-2022 to 24-12-2022	REVISION
19th week 26-12-2022 to 27-12-2022	REVISION

Class: MSc first year

Subject: ODE 2

Semester: EVEN

Week	Topics
1st Week 09-01-2023 to 14-01-2023	Linear systems, fundamental set and fundamental matrix of a homogeneous system,
2nd week 16-01-2023 to 21-01-2023	Wronskian of a system. Abel - Liouville formula, Adjoint system
3rd week 23-01-2023 to 28-01-2023	Reduction of the order of a homogeneous system
4th week 30-01-2023 to 04-02-2023	Systems with constant coefficients,
5th week 06-02-2023 to 11-02-2023	Method of variation of constants for a non-homogeneous system,
6th week 13-02-2023 to 18-02-2023	Floquet theory for periodic systems,
	Linear differential equations of order



7th week 20-02-2023 to 25-02-2023	n, Lagrange's identity, Green's formula (ASSIGNMENT)
8th week 27-02-2023 to 04-03-2023	Nonlinear differential equations, Plane autonomous systems and their critical points,
05-03-2023 to 12-03-2023	HOLI VACATIONS
9th week 13-03-2023 to 18-03-2023	Classification of critical points-rotation points, foci, nodes, saddle points,
10th week 20-03-2023 to 25-03-2023	Stability, asymptotical stability and unstability of critical points, 11th week 27-03-2023 to 01-04-2023 Almost linear systems, Perturbations, Simple critical points,
12th week 03-04-2023 to 08-04-2023	Dependence on a parameter, Liapunov function, Liapunov's method to determine stability for nonlinear system
13th week 10-04-2023 to 15-04-2023	Limit cycles, Bendixson non-existence theorem, Statement of Poincare-Bendixson theorem, Index of a critical point. (UNIT TEST) Motivating problems of calculus of variations, Shortest distance, Minimum surface of revolution, Brachistochrone problem, Isoperimetric problem,
14th week 17-04-2023 to 22-04-2023	Geodesic, Fundamental lemma of calculus of variations, Euler's equation for one dependent function and its generalization to 'n' dependent function and to higher order derivatives.
15th week 24-04-2023 to 29-04-2023	Conditional extremum under geometric constraints and under integral constraints. REVISION
18th week 19-12-2022 to 24-12-2022	REVISION
19th week 26-12-2022 to 27-12-2022	REVISION

