

UNIVERSITY OF MUMBAI

No. UG/153 of 2018-19

CIRCULAR:-

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology are hereby informed that the recommendations made by the I/c Dean, Faculty of Science & Technology have been accepted by the Academic Council at its meeting held on 8th September, 2018 vide item No. 4.14 relating to the syllabus as per the (CBCS) of Bridge course for T.Y.B.Sc. in Biotechnology, has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

14th March, 2019

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.14/08/09/2018

No. UG/153 -A of 2018

MUMBAI-400 032

14th March, 2019

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Science & Technology,
- 2) The Director, Board of Examinations and Evaluation,
- 3) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 4) The Director, Board of Students Development,
- 5) The Co-ordinator, University Computerization Centre,

(Signature)
(Dr. Ajay Deshmukh)
REGISTRAR

Academic Council _____

Item No: _____

UNIVERSITY OF MUMBAI



SYLLABUS OF BRIDGE COURSE IN BIOTECHNOLOGY

Program: leading to T.Y.B.Sc. In Biotechnology.

With effect from

Academic Year 2018-2019

Bridge Course for Biotechnology Syllabus Credit Based Semester and Grading System leading to T.Y.B.Sc (Biotechnology) To be implemented from the Academic year 2018-2019

Course	TOPICS	Credits	L / Week
USBTBC201	Paper I	03	03
USBTBC202	Paper II	03	03
USBTBCP201	Practical : USBTBC201 + USBTBC202	02	03

Course: USBTBC201	TOPICS (Credits : 03 Lectures/Week:03) Paper-I	No of Lectures
Unit1 Introduction to Computers and Biological Databases	<p>Computer Basics : Organization of a Computer; I/O Units; Computer Memory; Processor; Binary Arithmetic; Logic Circuit; Architecture; Operating System.</p> <p>Internet Basics : Connecting to the Internet, E-mail, FTP, www, Difference between www and Internet.</p> <p>Biological Databases : Classification of Databases - Raw and Processed Databases; Primary (NCBI), Secondary (PIR) and Tertiary or Composite (KEGG) Databases; Structure and Sequence Databases. Specialized Databases - Protein Pattern Databases; Protein Structure and Classification Databases (CATH/SCOP).</p> <p>Genome Information Resources: DNA Sequence Databases Specialized Genomic Resources. Protein Databases based on Composition, Motifs and Patterns.</p> <p>Protein Structure Visualization Software.</p>	15
UNIT 2 BLAST and Sequence Alignment	<p>BLAST and Sequence Alignment : BLAST and its Types; Retrieving Sequence using BLAST.</p> <p>Pairwise Alignment : Identity and Similarity; Global and Local Alignment; Pairwise Database Searching.</p> <p>Multiple Sequence Alignment: Goal of Multiple Sequence Alignment; Computational Complexity; Manual Methods; Simultaneous Methods; Progressive Methods; Databases of Multiple Alignment; Secondary Database Searching; Analysis Packages; MSA and Phylogenetic Trees.</p>	15
UNIT 3 Biostatistics	Theory and Problems based on- Coefficient of Correlation and Regression Analysis; Steps in Testing Statistical Hypothesis; Parametric	15

	Tests:- Z Test – Single Mean and Two Means, t-Test – Single Mean, Paired and Unpaired; Chi-Square Test.	
References	<ol style="list-style-type: none"> 1. Introductory Biostatistics. 1st edition. (2003), Chap T. Le. John Wiley, USA 2. Methods in Biostatistics- B. K. Mahajan –Jaypee Brothers 3. Bioinformatics- methods and applications Genomics, Proteomics and Drug discovery., S.C.Rastogi, N. Mendiratta, PHL learning Pvt. Ltd.3rd edition, 	

Course: USBTBC202	TOPICS (Credits : 03 Lectures/Week:03) Paper-II	No of lectures
UNIT 1 Infectious Diseases	<p>Host Parasite Relationship: Normal Flora; Factors Affecting the Course of Infection and Disease; Mechanisms of Infection and Virulence Factors.</p> <p>Infection: Patterns of Infection; Types of Infections; Signs and Symptoms; Epidemiology and Epidemiological Markers.</p> <p>Diseases: Origin of Pathogens; Vectors; Acquisition of Infection; Koch's Postulates.</p>	15
UNIT 2 Medical Microbiology- Causative Organisms- I	<p>Skin : <i>S. aureus, S. pyogenes.</i></p> <p>Respiratory Tract Infections : <i>M. tuberculosis, S. pneumoniae</i> (Characteristics Transmission, Course of Infection, Lab Diagnosis, Management of TB, Prevention and Control, Immuno and Chemoprophylaxis, DOTS and MDR). Urinary Tract Infections : <i>E.coli</i> : Characteristics, Virulence, Clinical disease, and <i>E.coli</i> Infections. <i>Proteus.</i></p>	15
UNIT 3 Medical Microbiology - Causative Organisms- II	<p>GI Tract Infections : <i>Salmonella and Shigella spp.</i> (Characteristics, Virulence- Pathogenesis and Immunity, Clinical Disease, Carriers Lab Diagnosis, Phage Typing Prophylaxis and Treatment).</p> <p>Sexually Transmitted Diseases : Syphilis and Gonorrhoea.</p> <p>Nosocomial Infections : <i>Ps. aeruginosa</i></p>	15
References	<ol style="list-style-type: none"> 1. Microbiology–6th Edition (2006), Pelczar M.J., Chan E.C.S., Krieg N.R., The 2. McGraw Hill Companies Inc. NY 	

	<p>3. Prescott's Microbiology, 8th edition (2010), Joanne M Willey, Joanne Willey, Linda Sherwood, Linda M Sherwood, Christopher J Woolverton, Chris Woolverton, McGrawHil Science Engineering, USA</p> <p>4. Text book of Medical Microbiology, Anantnarayan</p> <p>5. Microbiology- Frobisher</p> <p>6. General Principles of Microbiology- Stanier</p> <p>7. Fundamental Principles of Bacteriology - A. J. Salle McGraw Hill</p>
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Practicals

1. Identification of *S.aureus*-Isolation, Catalase, Coagulase Test.
2. Identification of *E.coli*-Isolation, Sugar Fermentations, IMViC.
3. Identification of *Salmonella*- Isolation, Sugar Fermentations, TSI Slant.
4. Identification of *Shigella*- Isolation, Sugar Fermentations, TSI Slant.
5. Identification of *Proteus*- Isolation, Sugar Fermentations, IMViC.
6. Identification of *Pseudomonas* - Isolation, Urease test, Oxidase Test, TSI Slant.
7. Familiarization with NCBI, EMBL, DDBJ, PIR, KEGG Databases.
8. Use of NCBI BLAST Tool.
9. Pairwise and Multiple Sequence Alignment and Phylogeny.
10. Classification of Proteins using CATH/SCOP.
11. Visualization PDB Molecules using Rasmol/Raswin.

Evaluation Scheme

I. Internal Exam-25 Marks

(i) Test– 20 Marks

20 marks Test – Duration 40 minutes

(ii) 5 Marks - Active participation in routine class instructional deliveries Overall conduct as a responsible student, manners, skill in articulation, leadership qualities demonstrated through organizing co-curricular activities, etc.

II. External Examination- 75 Marks

(i) Duration - 2.5 Hours.

(ii) Theory question paper pattern:-

All questions are compulsory.

Q.1 Unit I: 20 Marks

Q.2 Unit II: 20 Marks

Q.3 Unit III: 20 Marks

Q.4 Unit I, II and III: 15 Marks

III. Practical Examination – 50 marks

50 Marks: 40 marks + 05 marks (journal) + 05marks (viva)

****Theory and Practical Examination to be conducted at college level**

*****Certified Journal is compulsory for appearing at the time of Practical Exam***