



**Janardan Bhagat Shikshan Prasarak Sanstha's
CHANGU KANA THAKUR
ARTS, COMMERCE & SCIENCE COLLEGE,
NEW PANVEL (AUTONOMOUS)**

**Re-accredited 'A+' Grade by NAAC
'College with Potential for Excellence' Status Awarded by UGC
'Best College Award' by University of Mumbai**

Program: Bridge Course

**Revised Syllabus of Bridge Course in Conversational English
Choice Based Credit & Grading System (50:50)
w.e.f. Academic Year 2019-20**

Details of the Bridge Course

Sr. No.	Heading	Particulars
1	Title of Course	Bridge Course in Conversational English Paper I & II
2	Eligibility for Admission	12 th Arts, Commerce and Science of all recognised Boards
3	Passing marks	40%
4	Ordinances/Regulations (if any)	
5	No. of Semesters	Two
6	Level	U.G.
7	Pattern	Semester (50:50)
8	Status	Revised
9	To be implemented from Academic year	2019-2020

Preamble of the Syllabus:

Communication skills in English is considered as one of the most essential and integral part of personality development. Communication as a phenomenon is present everywhere. There is a strong desire in the mind of everyone to communicate with each other in academic as well as professional world.

It is necessary to express our ideas and thoughts in English because it is an international language. The students have lot of passion for global identity and understand the mechanism of conversational English.

This bridge course aims at providing basic knowledge of English language. It also empowers the students with the skills of oral communication and make them confident speaker.

Objectives of the Course:

- To acquaint students with the basic knowledge English Language
- To develop listening skills amongst the learners.
- To inculcate the self confidence amongst the students.
- To inform the students about different techniques of oral communication.

Course Outcome: By the end of the course, a student should develop the Ability:

- To understand the mechanism of spoken English.
- To develop the presentation skills.
- To make the students at ease while speaking in English.
- To enhance language skills of the students.

Title of the Paper: Bridge Course in Conversational English

For the subject of **Bridge Course in Conversational English** there shall be two papers of 05 lectures each.

Paper-I: -The Basics of English Language

1. Paper-I Unit-I will be on Sentence Formation
2. Paper-I Unit-II will be on Listening and Reading skills

Paper-II: - Techniques of Oral Communication

1. Paper-II Unit-I will be on Process of Communication
2. Paper-II Unit-II will be on Presentation Skills

Scheme of Examination for Each Semester:

Internal Evaluation: 50

Semester End Examination: 50

Marks will be as follows -:

I	Theory:		
	Each theory paper shall be of two hours duration.		
	All questions are compulsory and will have internal options. All questions carry equal marks		
	Q-1	From Unit –I& II A)Types of sentences B) Communication Process	10 Marks 10 Marks
	Q-2	From Unit – I Do as Directed	15 Marks
	Q-3	From Unit – II(Short Notes Any Three out five.)	15 Marks
Practical :- (Unit I & Unit II)			50 Marks

Choice Based Credit Grading and Semester System (CBCGS)

Bridge Course in Conversational English Syllabus

To be implemented from the Academic year 2019-2020

Paper I: -

Course Code	Unit	Topics	Credits	Lectures
UAR1ENG1	I	The Basics of English Language <ul style="list-style-type: none">• Sentence Formation• Listening and Reading skills	--	05
	II	Techniques of Oral Communication <ul style="list-style-type: none">• Process of Communication• Presentation Skills		05

Reference Books:

1. Mr. Rajendra Pal and Suri. English Grammar and Composition
Sultan Chand and Sons, New Delhi, 2013.
2. Dr. Aspi Doctor. Business Communication, Sheth Publisher, Mumbai, 2017.
3. Mr. Sashikumar Spoken English,
4. Murphy, Herta, Essentials of Business Communication, McGraw Hill Publisher
5. Kaul Asha. Effective Business Communication, Prentice Hall of India.
6. Mohan, Krishna. Speaking English Effectively, McGraw Hill Publisher.
7. Taylor, Grant. English Conversational Practice Tata McGraw Hill Publisher.
8. Bansal and Harrison, Spoken English, Orient Longman Publisher.



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Program: Bridge Course

**Revised Syllabus of Bridge Course in Business English
Choice Based Credit & Grading System (50:50)
w.e.f. Academic Year 2019-20**

Details of the Bridge Course

Sr. No.	Heading	Particulars
1	Title of Course	Bridge Course in Business English Paper I & II
2	Eligibility for Admission	12 th Arts, Commerce and Science of all recognised Boards
3	Passing marks	40%
4	Ordinances/Regulations (if any)	
5	No. of Semesters	Two
6	Level	U.G.
7	Pattern	Semester (50:50)
8	Status	Revised
9	To be implemented from Academic year	2019-2020

Preamble of the Syllabus:

Effective communication skills in English are inevitable in all the commercial transactions carried out in global business environment. Business skills in English is considered as one of the most essential and integral part of personality development. Communications as a phenomenon is present everywhere. There is a strong desire in the mind of everyone to communicate with each other in academic as well as professional world.

It is necessary to express our ideas and thoughts in English because it is an international language. The students have lot of passion for global identity and understand the mechanism of conversational English.

This bridge course aims at providing basic knowledge of English grammar and its application in communication. It also empowers the students with vocabulary enrichment and the skills of situational conversations.

Objectives of the Course:

- To acquaint students with the basic knowledge English grammar
- To develop listening skills amongst the learners.
- To inculcate the self confidence amongst the students.
- To inform the students about different techniques of situational conversations.
- To enrich the vocabulary of the students.

Course Outcome: By the end of the course, a student should develop the Ability:

- To understand the importance of grammar in English.
- To develop the skill of role of play amongst the students.
- To make the students at ease while speaking in English.
- To enhance language skills of the students.

Title of the Paper: Bridge Course in Business English

For the subject of **Bridge Course in Business English** there shall be two papers of 05 lectures each.

Paper-I: -The Basics of English Language

1. Paper-I Unit-I will be on Basic Grammar
2. Paper-I Unit-II will be on Parts of Speech

Paper-II: - Business English at Work Place

1. Paper-II Unit-I will be on Situational Conversations
2. Paper-II Unit-II will be on Vocabulary Building and Reading Skills

Scheme of Examination for Each Semester:

Internal Evaluation: 50

Semester End Examination: 50

Marks will be as follows -:

I	Theory:	
	Each theory paper shall be of two hours duration.	
	All questions are compulsory and will have internal options. All questions carry equal marks	
	Q-1	From Unit –I& II A)Tenses 10 Marks B) Parts of Speech 10 Marks
	Q-2	From Unit – I Word Formation 15 Marks
	Q-3	From Unit – II (Short Notes Any Three out five.) 15 Marks
Practical :- (Unit I & Unit II)		50 Marks

Choice Based Credit Grading and Semester System (CBCGS)

Bridge Course in Business English Syllabus

To be implemented from the Academic year 2019-2020

Paper I: -

Course Code	Unit	Topics	Credits	Lectures
UAR1ENG1	I	The Basics of English Language <ul style="list-style-type: none">• Basic Grammar• Parts of Speech	--	05
	II	Business English at Work Place <ul style="list-style-type: none">• Situational Conversations• Vocabulary Building and Reading Skills		05

Reference Books:

1. Mr. Rajendra Pal and Suri. English Grammar and Composition
Sultan Chand and Sons, New Delhi, 2013.
2. Dr. Aspi Doctor. Business Communication, Sheth Publisher, Mumbai, 2017.
3. Mr. Sashikumar Spoken English,
4. Murphy, Herta, Essentials of Business Communication, McGraw Hill Publisher
5. Kaul Asha. Effective Business Communication, Prentice Hall of India.
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Bridge Course in Chemistry

Introduction

This course is to refresh the basic concepts in Chemistry. It will help students to understand certain fundamental principles, largely having to do with structures. It can help immensely to reduce the complexity in various concepts in Chemistry. Bridge course will help the students to connect with the core subject and learn the skills which will make them confident and enhance their attitude to perform better.

Objectives

- To make the student familiar with the essential understanding of Chemistry.
- To solidify students basic practical skills used in Chemistry.
- To develop students approach in logical and systematic way, which make them enable the right study habits for mastering Chemistry.
- To demonstrate good laboratory practices among the students.

Eligibility:

All the students who have enrolled for T.Y.B. Sc. Chemistry course can opt for this bridge course.

Duration of the Course : 12 week (Three Months)

Number of Lectures: Total- 36 Theory- 24

Practical- 12

Course Content

Theory:

- 1) Physical Chemistry: 06 lectures
- 2) Inorganic Chemistry: 06 Lectures
- 3) Organic Chemistry: 06 Lectures
- 4) Analytical Chemistry: 06 Lectures

Practicals:

- 1) Physical Chemistry: 03 Lectures
- 2) Inorganic Chemistry: 03 Lectures
- 3) Organic Chemistry: 03 Lectures
- 4) Analytical Chemistry: 03 Lectures

Scheme of Examination

The scheme of examination is divided into theory papers, internal assessments and practical.

1) Internal Examination: There will be a continuous assessment of the students which includes assignments, class tests and presentations on the selected topics covered in the course. 20 marks are allotted for internal examination.

2) Course end examination: There will be 60 marks theory examination after the completion of the course. The question paper will be carrying 6 questions of 12 marks each. The students have to attempt any 5, but 1st question will be compulsory. The students will have to score at least 40% of the total marks to pass in the paper.

3) Practical Examination: The students will be tested for their practical skills by the examination. The examination will be of 20 marks.

Draft of Syllabus

Physical Chemistry

Theory

I) Thermodynamics

1 Lecture

System, Types of system- Open, closed, isolated, Reversible and irreversible processes, First law of thermodynamics, Internal energy, Enthalpy, Second law of thermodynamics, Entropy, Free energy

II) Molecular Spectroscopy

1 Lecture

Electromagnetic radiations, Wavelength, Frequency, Wave number, Quantization of energy, Electromagnetic spectrum, Absorption, Emission, Scattering, Fluorescence, Energies associated with molecule, Beer-Lamberts law

III) Electrochemistry

1 Lecture

Electrochemical cell, Types of electrochemical cell, Daniell cell, Representation of cell, Types of reversible electrodes, Reference electrodes, Nernst's equation

IV) Nuclear Chemistry

1 Lecture

Radioactivity, Radioactive element, Alpha, beta and gamma radiations, Properties of alpha, beta and gamma radiations, Radioactive decay

V) Chemical Kinetics

1 Lecture

Definition of chemical kinetics, Scope of chemical kinetics, Rate of reaction Order of reaction, Molecularity of reaction, Zero order reaction, First order reaction, second order reaction

V) Solid state chemistry

1 Lecture

Amorphous and crystalline solids, Symmetry in crystals, Simple cubic crystal, Face centred cubic crystal, Body centred cubic crystal

Practicals

3 Lecture

I) Solutions: Preparation, Dilution

II) Instruments: Introduction to instruments, Handling of instruments, Calibration of instruments

III) Electrodes: Introduction to electrodes, Handling of electrodes

IV) Graphical representation: Equations of straight line, plotting of graph, Slope, Intercept

V) Scientific calculator: Use of scientific calculator, some mathematical solutions

Inorganic Chemistry

Theory

- I) Classification of elements and periodic trends:** 1 L
- II) Chemical Bonding:** 2 L
Different types of bond, valence bond theory (VBT), Molecular orbital theory (MOT), VSEPR Theory
- III) Concept of Hybridization:** 1 L
Defination, Different types of hybridization
- IV) Coordination Chemistry:** 1 L
Bonding in coordination compounds, crystal field theory (CFT)
- V) Chemistry of Transition elements:** 1 L
Different Transition Series, properties of transition elements

Practicals 3L

- i) Gravimetric Analysis
- ii) Volumetric Analysis

Organic Chemistry

Theory

I) Introduction to Organic Chemistry: **1 L**

Definition of Organic Chemistry, Source of Organic Compounds, comparison of organic compounds with inorganic compounds, Importance of organic compounds

II) Structure of Organic Molecules: **1 L**

Concept of bonding, Valency of carbon, Hybridization of carbon, Nitrogen and oxygen in organic compounds, Resonance concept, Drawing of resonance structures

III) Nomenclature of Organic Compounds: **1 L**

Types of Organic Compounds, Functional groups, Basic rules for IUPAC nomenclature, writing IUPAC names from structural formulas, writing structural formula from IUPAC names, common mistakes made by students in using IUPAC rules

IV) Stereochemistry of Organic Compounds: **1 L**

Structural Isomerism, Optical and Geometrical Isomerism, difference between configuration and conformation, Asymmetric carbon atom chiral carbon atom, Representation of configuration by wedge-dot formula and projection formula, inter conversion of the formulae

V) Organic Reactions and their Mechanism: **2 L**

Inductive effect, hyperconjugation, carbocations, carbanions, free radicals, Electrophiles and Nucleophiles, Types of organic reactions, Guidelines for writing of organic reaction mechanism with example of SN^1 & SN^2 reaction

Practicals

General Techniques of Separation and Purification **3 L**

Purification methods of organic compounds- Choice of the solvent, Filtration, Recrystallization, Distillation
Separation techniques- methods of separation of binary mixture (Solid + Solid, Solid + Liquid, Liquid + Liquid), Determination of Physical Constant- Melting point & Boiling point

Analytical Chemistry

Theory

(I) Introduction to Analytical Chemistry **2L**

Introduction, Scope and importance of analytical chemistry, Chemical Analysis, Application of analytical chemistry in various fields.

(II) Sampling **1 L**

Steps involved in chemical analysis-

- i) Sampling
- ii) Choice of analytical method
- iii) actual analysis
- iv) interpretation of results

(III) Analytical Methods **2L**

Classification of analytical methods

(IV) Figures of merits **1L**

Accuracy, Precision, Detection limit, Sensitivity, Selectivity

Practical **3L**

I) Standardization

A) Preparation of standard solution-

- i) Primary standard
- ii) Secondary standard

B) Standardization of solutions



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Revised Syllabus of Bridge Course in Computer Science

w.e.f. Academic Year 2019-20

Revised Syllabus of Bridge Course in Computer Science

Introduction: It is a course in which learners will learn about Basic of Computer Organization & Programming Construction.

Objectives:

- To get review of basic concepts of Computer Design & Architecture.
- Preparing students to exploit with programming skills.

Eligibility: 10+2(Science) passed students

Duration: 10 hrs theory

Fee: Rs. 200/-

Seats: As per demand of the students

Course Outline:

Module - I	Introduction to Computer Systems	5L
	<p>a) Computer Fundamentals- Types of Computers, Generations of Computers, Physical parts of Computers-Input Device, Output Device,Motherboard,IC's,Bus lines,Clock,Microprocessor Chip, Memory Chips,Ports,Power supply,CPU,ALU,CU,Primary Memory,Printers,Secondary Storage Devices.</p> <p>b) Software-Types of OS,Functions,Examples like DOS,UNIX,Linux, Windows, Assembly and Higher Languages.</p> <p>c) Input Output Ports/Connections-Serial, Parallel and Universal Serial Bus, Bluetooth, Firewall.</p>	
Module - II	Programming Methodology	5L
	<p>a) General Concepts-Expressions,variables,Identifiers,Comments, Indentation, Debugging and running programs, Syntax errors, Run-time errors, Logical errors.</p> <p>b) Problem Solving Methodologies-Understanding of problems, Solution, Breaking down solution into simple steps,indentification of arithmetic and logical operations.</p> <p>c) Algorithm-Rules of design algorithm, Pseudo code Convention, Examples on algorithm, structured data types.</p>	

Rules for Conduct of Examinations for Bridge Course in Computer Science

Theory Paper:

Question 1	Objectives Questions with options	20 marks
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Evaluation System:

Sr.No	Exam No.	Name of the Students	Theory
		Maximum Marks	20
		Minimum Marks	08
		Obtained Marks	

Slandered of Passing: 40% Grading

System:

A Grade	Above 75%
B Grade	60-74%
C Grade	40-59%



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Program: Bridge Course in Microbial Studies

Revised Syllabus of Bridge Course in Microbial Studies

for F.Y.B.Sc. Microbiology

w.e.f. Academic Year 2019-20

**Bridge Course in Microbial Studies Syllabus
for F.Y.B.Sc Microbiology**

Sr. No.	Heading	Particulars
1	Title of Course	Bridge Course In Microbial Studies
2	Eligibility for Admission	12 th Science of all recognised Board and students enrolled for F.Y.B.Sc.
3	Passing marks	40%
4	Ordinances/Regulations (if any)	-
5	Duration	10hrs
6	Level	U.G.
7	Pattern	-
8	Status	New
9	To be implemented from Academic year	2019-2020

Preamble of the Syllabus:

This course is designed for First Year B.Sc. Microbiology learners, to be completed in ten hours. On the successful completion, learners will be awarded with certificate of course. The topics prescribed in the syllabus mainly emphasis on general introduction to the microbial World covering basic concepts and types of microorganisms. In the later section of syllabus, three important branches of microbiology viz. Medical, Industrial and Agricultural Microbiology will be taught to create awareness about scope of microbiology. This course will be helpful to make student curious by providing and recommending them different reference books in Microbiology. This course will fill the gap of subject knowledge between higher secondary and undergraduate studies. This course may be helpful to learners enrolled for FYBSc to decide their career goals.

Objectives of the Course:

- To make the learners aware about diversity of microorganisms
- To make the learners aware about scope of Microbiology
- To make the learners familiar with reference books in Microbiology
- To fill the gap of subject knowledge between higher secondary and undergraduate studies.

Course Outcome: By the end of the course:

Learners will develop interest in the subject of Microbiology and it will also be useful to fill the gap of subject knowledge between higher secondary and graduate studies.

Bridge Course in Microbial Studies:

For this course there shall be only one paper for 10 lectures comprising of two modules.

Module-I: Introduction to Microbiology

Module-II: Scope of Microbiology

Scheme of Examination:

Examination: 20 Marks will be as follows -:

Question 1	Objectives Questions with options: MCQs, Fill in the Blanks, Match the pairs, Definations/Concepts. (Any 20 out of 30)	20 Marks
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**Bridge course in microbial studies:
For F.Y.B.Sc Microbiology
Detailed Syllabus
To be implemented from the Academic year 2019-20**

Bridge Course in Microbial Studies	[10]
1 Introduction to Microbiology	
i. Microbial Diversity: Archaeobacteria, Eubacteria and Extremophiles	[03] [01]
ii. Reference books for Microbiology	
2 Scope of Microbiology	
i. Medical Microbiology	[02]
ii. Industrial Microbiology	[02]
iii. Agricultural Microbiology	[02]

Books and References:

1. Prescott L.M., Harley J.P. and Klein D.A., Microbiology, 5th Edition, October-2002, The McGraw–Hill Companies, 2002.
2. Stanier R.Y., General Microbiology, 5th Edition, 1987, Macmillan Press Ltd.
3. Pelczar, Elementary Microbiology, McGraw–Hill Companies



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Program: Bridge Course in Microbial Techniques

**Revised Syllabus of Bridge Course in Microbial Techniques
for T.Y.B.Sc. Microbiology
w.e.f. Academic Year 2019-20**

**Bridge Course in Microbial Techniques Syllabus
for T.Y.B.Sc Microbiology**

Sr. No.	Heading	Particulars
1	Title of Course	Bridge Course In Microbial Techniques
2	Eligibility for Admission	Sudents enrolled for T.Y.B.Sc.
3	Passing marks	40%
4	Ordinances/Regulations (if any)	-
5	Duration	10hrs
6	Level	U.G.
7	Pattern	-
8	Status	New
9	To be implemented from Academic year	2019-2020

Preamble of the Syllabus:

This course is designed for T.Y.B.Sc. Microbiology learners, to be completed in ten hours. On the successful completion, learners will be awarded with certificate of course. The topics prescribed in the syllabus mainly emphasis on basic aspects of microbiological practicals such as preparation of solutions, representation of data and reporting of observations, results and conclusion. In the later section of syllabus, some important techniques in Microbial Genetics, Medical Microbiology and Immunology, Biochemistry and Bioprocess technology will be taught to augment the theorotical aspects related to those different techniques. This course will be helpful to make student skillful by providing the different aspects of various bioassays. From this course, learners will enhance their technical as well as practical writing skills. This course will encourage the learners to get enrolled for post graduation and post graduate diploma and or other courses in Microbial techniques, Instrumentation, Bioanalytical Sciences etc.

Objectives of the Course:

- To enhance the learner's practicals skills and practical data compilation and its representation.
- To enhance the learner's skills about important techniques in Microbiology.

Course Outcome: By the end of the course:

- Learners will get more knowledge of Microbial techniques and it will also be useful to work smoothly on various practicals in the Microbiology. It will promote the learners towards bioanalytical techniques as well as inculcate practical skills into them.

Bridge Course in Microbial Techniques:

For this course there shall be only one paper for 10 lectures comprising of five modules of two lectures each.

- 1 Module-I: Introduction to Basic Techniques**
- 2 Module-II: Techniques in Microbial Genetics**
- 3 Module-III: Techniques in Immunology and Medical Microbiology**
- 4 Module-IV: Techniques in Microbial Biochemistry**
- 5 Module-V: Techniques in Bioprocess Technology**

Scheme of Examination:

Examination: 20 Marks will be as follows -:

Question 1	Objectives Questions with options: MCQs, Fill in the Blanks, Match the pairs, Definitions/Concepts. (Any 20 out of 30)	20 Marks
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**Bridge course in Microbial Techniques:
For T.Y.B.Sc Microbiology
Detailed Syllabus
To be implemented from the Academic year 2019-20**

Bridge Course in Microbial Techniques	[10]
6 Introduction to Basic Techniques <ul style="list-style-type: none">i. Preparation of Normal , Molar Solutionsii. Data Representation: Writing observations and Graphs Plottingiii. Interpretation of results and conclusion	[02]
7 Techniques in Microbial Genetics <ul style="list-style-type: none">i. Transformation and Conjugationii. Phage Assay	[02]
8 Techniques in Immunology and Medical Microbiology <ul style="list-style-type: none">i. Coomb's Test and Reverse Typingii. ELISAiii. WIDAL & VDRL	[02]
9 Techniques in Microbial Biochemistry <ul style="list-style-type: none">i. Estimation of Phenol, Proteins, Uric Acidii. Estimation of Penicilliniii. β-Galactosidase assay	[02]
10 Techniques in Bioprocess Technology <ul style="list-style-type: none">i. Bioassay of Vitamin B₁₂ & Penicillinii. Production of invertase by immobilized yeast cells	[02]

Books and References:

1. Prescott L.M., Harley J.P. and Klein D.A., Microbiology, 5th Edition, October-2002, The McGraw-Hill Companies, 2002.
2. Stanier R.Y., General Microbiology, 5th Edition, 1987, Macmillan Press Ltd.
3. Pelczar, Elementary Microbiology, McGraw-Hill Companies



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**Revised syllabus of
Program: Bridge Course in Mathematics and
Statistics for Biotechnology**

(w.e.f. the Academic Year 2019-2020)

Bridge Course in Mathematics and Statistics for Biotechnology

Eligibility: prerequisite course for Students without Mathematics at XI & XII standard

Duration: 15Hrs. (One Academic Year)

Fee:

Seats: As per demand of the students

Infrastructure Requirements:

- Well Equipped Lecture room
- Well Equipped Laboratory
- Library with relevant books
- LCD Projector

Staff Requirement:

- A coordinator who will be responsible for the smooth conduct of the course.
- Coordinator of the course may be paid an Honorarium of Rs.1000/- per year
- A lecture and practical can be conducted by the core faculty or visiting having expertise in concerned field. Guest Faculty/internal Faculty may be remunerated @ Rs.200/- per lecture of 1 hr. Duration.
- Faculty must possess at least a Bachelor Degree with a expertise respective filed.
- Faculty from industry and research institutes.

Theory Question Paper Pattern:

Question 1	Objectives Questions with options	20 marks
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Course content:

Course Name	Theory Hours
Bridge Course in Mathematics and Statistics	15Hrs

Bridge Course in Mathematics and Statistics for Biotechnology

Unit	Unit name	Topics	Lectures /Hrs
1	Review of algebra	1. Arithmetic and geometric progressions. 2. Logarithm 3. Polynominal Equations, Rational roots 4. Functions: The Exponential Function, ax and $\log x$ 5. Exponential growth and Decay. 6. Graphs of Functions 7. Linear equations 8. Quadratic Functions and equations 9. Sequences	6
2	Calculus	Differential calculus (limits, derivatives), integral calculus (integrals, sequences and series <i>etc.</i>).	5
2	Preliminary :Descriptive statistics	1. Introduction 2. Frequency Tables, Histograms 3. Measures of Central tendency : Mean and Median 4. Measures of Dispersion: Variance and Standard deviation.	2
3	Basic Probability	1. Introduction: Sample Space and Events 2. Axioms of Probability and simple examples	2

REFERENCE:

1. SCHAUM'S outline of Theory and Problems of College Mathematics 3rd edition, by Philip. A Schmidt and Frank Ayres, Tata McGraw Hill publication/Chapters 2, 3, 4, 5, 12, 39, 41, 45, 46, 48.
2. SCHAUM'S outline of theory and Problems of Introduction to Probability and Statistics by Seymour Lipschutz and John J. Schiller. Tata McGraw Hill publishing Ltd. Chapters 1.1, 1.2, 1.3, 1.4, 3.1, 3.2, 3.3, 3.4.
3. THOMAS CALCULUS 11th edition, by George B Thomas Maurice D. Weir, Joel Hass, Frank R. Giordano, Pearson Addison Wesley 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 5.3, 7.3, 7.4, 7.5, 8.1, 11.1.
4. Calculus & Analytical Geometry Thomas & Finney.

Evaluation System:

Sr. No	Exam No.	Name of the Students	Theory	Percentage %	Remarks	Grade
		Maximum Marks	50			
		Minimum Marks	17			
		Obtained Marks				

Slander of Passing: 40%

Grading System:

A Grade	Above 75%
B Grade	60-74%
C Grade	40-59%

**JANARDAN BHAGAT SHIKSHAN PRASARAK SANSTHA'S
CHANGU KANA THAKUR ARTS, COMMERCE & SCIENCE COLLEGE,
NEW PANVEL (AUTONOMOUS)**

Department of Information Technology

SUBJECT: Bridge Course In Information Technology

- **Periods per week** 1 Period (50 minutes) : 02 Per week
- **Evaluation System** : Theory-50 Marks
- **Practical- 50 Marks**
- **Description:** This course furnishes the learners to become familiar in Information Technology
- **Eligibility Criteria:** A candidate who passed the HSC examination.
- **Duration of the Course:** 10 Hours
- **Examination:** On “Successful Program Completion”, college will award a Certificate encompassing the overall performance.

Syllabus:

- **Basics of Information Technology**
- **MS - Word**
- **MS – PowerPoint**
- **Networking**
- **Internet**
- **System Basics**
- **Google Application like Google Classroom, Google Form etc.**

The Scheme of Examination is divided as:

i. Theory:

Theory will be conducted of 50 marks based on the specified curriculum.

ii. Practical:

Practical will be conducted of 50 marks based on the specified curriculum.

Passing Standard

Learners must score atleast 40% marks(aggregate) to pass the examination.

Performance Grading

Sr.no	Marks	Grade
1	75% or Above	A
2	60% - 74%	B
3	55% - 59%	C
4	40% - 54%	D
5	39% or below	F



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'Best College Award' by University of Mumbai**

Program: B.Com.

**Revised Syllabus of F.Y.B.Com. : Bridge Course in Mathematical
& Statistical Techniques
Choice Based Credit & Grading System
w.e.f. Academic Year 2019-20**

Sr. No.	Heading	Particulars
1	Title of Course	Bridge Course in Mathematical & Statistical Techniques
2	Eligibility for Admission	12 th Science & Commerce of all recognised Board
3	Passing marks	40%
4	Ordinances/Regulations (if any)	
5	No. of Semesters	One
6	Level	U.G.
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic year	2019-2020

Preamble:

Mathematical thinking is important for all members of a modern society as a habit of mind for its use in the workplace, business and finance and for personal decision making. Mathematics is fundamental to national prosperity in providing tools for understanding Science, Engineering, Technology and Economics. It is essential in public decision making and for participation in the knowledge economy. Mathematics is a creative discipline.

Objectives:

1. To introduce the basic concepts of Mathematics and Statistics.
 2. To increase the learners appreciation of the basic role played by Mathematics in modern technology.
 3. To prepare learners to face challenges of privatization and globalization by providing basic knowledge and skill of Mathematics and Statistics.
 4. To bridge the gap between commerce and higher Mathematics.
-

Learning Outcomes:

This course will help students to learn about the basic concept relating Mathematics and Statistics , Calculus, Measures of central tendencies, Dispersion, sources of data, classification of data, Probability, etc. It will further help to apply the statistical tools and techniques for decision making and for research studies.

Scheme of Examination

The learner's Performance shall be assessed by Course End Examinations with 50 marks.

Course End Examination: 50 Marks

- Duration: The examination shall be of 2 hour's duration.

Passing Standard

The learners shall have to score at least 40% of the total marks to pass in the course.

Syllabus for Bridge Course in Mathematical & Statistical Techniques

Bridge Course in Mathematical & Statistical Techniques

Unit-I	Introduction to Mathematics and Statistics, Mathematics and you, Ratio and proportion, Percentage, Profit and Loss, Partnership and Discount.
Unit -II	Arithmetic and Geometric Progression, Functions: constant function, linear function, demand and supply function, total revenue function, total cost and profit function and their applications. Quadratic functions and equations
Unit- III	Introduction to Calculus: Rate of Change and Limits, Derivatives as a Rate of Change, Derivatives of function: Constant function, x^n , e^x , a^x , $\log x$, Differentiation rules: Scalar multiplication, addition, subtraction, product and quotient, simple examples.
Unit -IV	Preliminary: Descriptive Statistics: Introduction, Frequency Tables, Histograms, Measures of Central Tendency: Mean and Median, Measures of Dispersion: Variance and Standard deviation.
Unit-V	Basic Probability: Introduction, Sample space and events, Axioms of Probability and simple examples.

Reference Books**Mathematical and Statistical Techniques**

- *Mathematics for Economics and Finance Methods and Modelling* by Martin Anthony and Norman Biggs, Cambridge University Press, Cambridge low-priced edition, 2000, Chapters 1, 2, 4, 6 to 9 & 10.
- *Applied Calculus: By Stephen Waner and Steven Constenoble*, Brooks/Cole Thomson Learning, second edition, Chapter 1 to 5.
- *Mathematics for Business Economics: By J. D. Gupta, P. K. Gupta and Man Mohan*, Tata McGraw Hill Publishing Co. Ltd., 1987, Chapters 9 to 11 & 16.
- *STATISTICS by Schaum Series.*
- *Operations Research by Gupta and Kapoor*
- *Fundamentals of Statistics - D. N. Elhance.*
- *Statistical Methods - S.G. Gupta (S. Chand & Co.*
- *Business Mathematics & Statistics: B Aggarwal, Ane Book Pvt. Limited*
- *Business Mathematics: A P Verma, Asian Books Pvt. :Limited.*
- SCHAUM'S outline of Theory and Problems of College Mathematics , 3rd edition, by Philip. A Schmidt and Frank Ayres, Tata McGraw Hill Publication.
- SCHAUM'S outline of Theory and Problems of Introduction to Probability and Statistics by Seymour Lipschutz and John J. Schiller: Tata McGraw Hill Publishing Ltd.

J. B. S. P. Sansth'a
**CHANGU KANA THAKUR ARTS COMMERCE AND SCIENCE COLLEGE,
NEW PANVEL (AUTONOMOUS)**

Department of Economics
REMEDIAL COURSE IN ECONOMICS

Course Content

1. Basic Concepts in Economics:

- 1.1 Definitions of Economics
- 1.2 Introduction to Branches of Economics
- 1.3 Demand and Supply
- 1.4 Production Cost and Revenue
- 1.5 Market
- 1.6 Price Determination
- 1.7 Meaning of Micro Economics
- 1.8 Concept of Consumer Behavior
- 1.9 Firm
- 1.10 Perfect Competition

Dr. B. S. Patil
BOS Chairman
Department of Economics
UG and PG

Principal
C.K.T.A.C.S. College,
New Panvel
(Autonomous)

J. B. S. P. Sansth'a
**CHANGU KANA THAKUR ARTSCOMMERCE AND
SCIENCE COLLEGE, NEW PANVEL (AUTONOMOUS)**

Department of Geography

REMEDIAL COURSE IN GEOGRAPHY

Couse Content

1. Basic Concepts in Geography:

- 1.1 Definitions of Geography
- 1.2 Branches of Geography
- 1.3 Earthquake and Volcano
- 1.4 Rock Formation
- 1.5 Movement of Earth's Crust
- 1.6 Weather and Climate
- 1.7 Atmosphere
- 1.8 Soil- Concept and Types

2. Basic Concepts in Geography:

- 2.1 Location
- 2.2 Map -Types
- 2.3 Directions
- 2.4 Scale
- 2.5 Conventional Signs and Symbols
- 2.6 Projections
- 2.7 Map Sketching
- 2.8 Map Reading

J. B. S. P SANTHA'S

CHANGU KANA THAKUR

ARTS, COMMERCE AND SCIENCE COLLEGE, NEW PANVEL

DEPARTMENT OF HISTORY

REMEDIAL COURSE IN HISTORY

Syllabus

Module- I

What is history

Importance of history

Nature and Scope of history

Module-II

Archaeology and history

Museology and history

Archival and History

Module-III

Epigraphy and History

Numismatic science and history

History and other sciences

J B S P SANSTHAS

CHANGU KANA THAKUR A.C.S.COLLEGE, NEW PANVEL

Remedial Course in Rural Development

COURSE CONTENT

- Concept of Rural development
- Nature and Scope of Rural development
- Objectives of Rural development
- Importance of Rural development
- Concept of Rural society
- Rural Administration
- Panchayat Raj System in Maharashtra

Remedial course in Political Science



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ARTS, COMMERCE & SCIENCE
COLLEGE, NEW PANVEL
(AUTONOMOUS)

Re-accredited 'A+' Grade by NAAC
'College with Potential for Excellence' Status Awarded by UGC
'Best College Award' by University of Mumbai

Program: Remedial course
Revised Syllabus of Remedial course in
Political Science
Choice Based Credit & Grading System
w.e.f. Academic Year 2019-20

Remedial course in Political Science

Sr. No.	Heading	Particulars
1.	Title of Course	Remedial course in Political Science
2.	Eligibility for Admission	F.Y. Class
3.	Duration	10Hrs. (One Academic Year)
4.	Number of students	As per the demand of the students
5.	Level	U.G.
6.	Pattern	Annual (20 Marks)
7.	Status	Revised
8.	To be implemented from Academic year	2019-2020

Course Name	Theory Hours
Remedial Course in Political Science	10Hrs

Remedial course in Political Science

- **Syllabus**

Remedial Course in Political Science

1. Meaning and Evolution of Political Science
2. Parliamentary form of Government and Presidential form of Government
3. Philosophy of Indian Constitution: Preamble, Directive Principles of State Policy
4. Composition and Structure of parliament
5. Composition and Membership of Local Self Government

Theory Question Paper Pattern:

Question 1	Objectives Questions with options	20 marks
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Evaluation System:

Sr. No	Exam No.	Name of the Students	Theory	Percentage %	Remarks	Grade
		Maximum Marks	20			
		Minimum Marks	8			
		Obtained Marks				

Standard of Passing: 40%

Separate head of passing-Theory

Grading System:

A Grade	Above 75%
B Grade	60-74%
C Grade	40-59

JBSP SANSTHA'S
CHANGU KANA THAKUR ARTS, COMMERCE & SCIENCE COLLEGE(AUTONOMOUS)
NEW PANVEL

SYLLABUS FOR REMEDIAL COURSE IN COMMERCE 2020-21

F.Y.B.Com

Subject : Commerce I

Semester I

SR NO.	MODULES
1	Business : Introduction: Concept, Functions, Scope and Significance of business. Traditional and Modern Concept of business. Objectives of Business: Steps in setting business objectives, classification of business objectives, Reconciliation of Economic and Social Objectives. New Trends in Business: Impact of Liberalization, Privatization and Globalization, Strategy alternatives in the changing scenario, Restructuring and turnaround strategies
2	Business Environment : Introduction : Concept and Importance of business environment, Interrelationship between Business and Environment Constituents of Business Environment: Internal and External Environment, Educational Environment and its impact,

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NEW PANVEL**

SYLLABUS FOR REMEDIAL COURSE

F.Y.B.Com

Subject : Commerce II

Semester II

SR NO.	MODULES
1	Concept of Services : Introduction , Meaning, Characteristics, Scope and Classification of Services – Importance of service sector in the Indian Marketing Mix Services: Consumer expectations, Services Mix, - Product, Place, Price, Promotion, Process of Services delivery, Physical evidence and people
2	Retailing : Introduction: Concept of organized and unorganized retailing , Trends in retailing, growth of organized retailing in India, Survival strategies for unorganized Retailers Retail Format: Store format, Non – Store format, Store Planning, design and layout

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Arts, Commerce and Science College, New Panvel (Autonomous).

Department of Accounting and Finance

Academic Year 2020-2021

Remedial Course in Cost Accounting

Syllabus

Sr. No.	Modules/ Units
1	Introduction to Cost Accounting
	<ul style="list-style-type: none">• Evolution• Objectives and Scope of Cost Accounting• Importance and Advantages of Cost Accounting• Difference between Cost Accounting and Financial Accounting• Limitations of Financial Accounting• Definitions: Cost, Costing and Cost Accounting• Classification of Cost on Different Bases• Cost Allocation and Apportionment• Coding System• Essentials of Good Costing System
2	Direct Cost & Indirect Cost
	<ul style="list-style-type: none">• Material Cost• Labour Cost• Overhead

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Arts, Commerce and Science College, New Panvel (Autonomous).

Department of Accounting and Finance

Academic Year 2020-2021

Remedial Course in Financial Management

Syllabus

Sr. No.	Modules/ Units
1	Introduction to Financial Management
	<ul style="list-style-type: none">• Introduction, Meaning, Importance• Scope and Objectives of financial management, Role & Function of finance executives,• Profit maximization, wealth maximization and Value Maximization• financial distress and insolvency,• Agency cost & its mitigation• Agency Problem & Agency cost
2	Concepts in Valuation
	<ul style="list-style-type: none">• The Time Value of Money• Present Value• Internal Rate of Return• Bonds Returns• The Returns from Stocks• Annuity• Techniques of Discounting• Techniques of Compounding
3	Leverage
	<ul style="list-style-type: none">• Introduction• EBIT & EPS Analysis• Types of Leverages: Operating Leverage, Financial Leverage & Composite Leverage.

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Department of Management Studies

Remedial (2020-21)

IFA SYLLABUS

- Meaning & Scope of Accounting
- Accounting Terminology
- Accounting Principles
- Accounting Terminologies
- Introduction to Accounting Standards
- Accounting Cycle
- Journal Process
- Rules regarding posting
- Relationship between Journal and Ledger
- Classification of Capital and Revenue Expenditure



Janardan Bhagat Shikshan Prasarak Sanstha's
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NEW PANVEL (AUTONOMOUS)

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'Best College Award' by University of Mumbai

Program: Remedial course
Revised Syllabus of Remedial course in Zoology
Choice Based Credit & Grading System
w.e.f. Academic Year 2019-20

Remedial course in Zoology

Sr. No.	Heading	Particulars
1.	Title of Course	Remedial course in Zoology
2.	Eligibility for Admission	F.Y. Class
3.	Duration	10Hrs. (One Academic Year)
4.	Fee	Rs. 500/-
5.	Number of students	As per the demand of the students
6.	Level	U.G.
7.	Pattern	Annual (20 Marks)
8.	Status	Revised
9.	To be implemented from Academic year	2019-2020

Remedial course in Zoology

Infrastructure Requirements:

- Well Equipped Lecture room
- Well Equipped Laboratory
- Library with relevant books
- LCD Projector

Staff Requirement:

- A coordinator who will be responsible for the smooth conduct of the course.
- Coordinator of the course may be paid an Honorarium of Rs.500/- per year
- A lecture and practical can be conducted by the core faculty or visiting having expertise in concerned field. Guest Faculty/internal Faculty may be remunerated @ Rs.100/- per lecture of 1 hr. Duration.
- Faculty must possess at least a Bachelor Degree with a expertise respective filed.
- Faculty from industry and research institutes.

Course Name	Theory Hours
Remedial Course in Zoology	10Hrs

Syllabus

Remedial Course in Zoology

1. Introduction of Zoology
2. Definition and basics of Zoology
3. Different branches of Zoology
4. Scope of Zoology
5. Carriers in the areas of Zoology
6. Introduction to various Zoological Organizations
7. Common terminologies used in Zoology
8. Introduction to Kingdom Animalia up to Phylum level

Theory Question Paper Pattern:

Question 1	Objectives Questions with options	20 marks
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Evaluation System:

Sr. No	Exam No.	Name of the Students	Theory	Percentage %	Remarks	Grade
		Maximum Marks	20			
		Minimum Marks	8			
		Obtained Marks				

Standard of Passing: 40%

Separate head of passing-Theory

Grading System:

A Grade	Above 75%
B Grade	60-74%
C Grade	40-59%

**J.B.S.P.SANSTHA'S
CHANGU KANA THAKUR ARTS, COMMERCE AND SCIENCE COLLEGE,
NEW PANVEL (AUTONOMOUS)**

Remedial Course in Mathematics for Science

First Semester

Syllabus

Unit-I	Set Theory, operation of sets, relation, functions, types of functions, composite functions, complex numbers, Limits and continuity
Unit -II	Binomial Theorem, Divisibility in integers, Fundamental theorem of Arithmetic, Euler's theorem, finite induction

Scheme of Evaluation:

The Scheme of Evaluation shall be conduct of 10 sessions of slow learners from F.Y. B.Sc. Class.

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NEW PANVEL (AUTONOMOUS)**

Remedial Course in Mathematics for Science

Second Semester

Syllabus

Unit-I	Sequence and series, Arithmetic progression and Geometric progression, Differentiability, Cartesian Co-ordinates and polar Co-ordinates
Unit -II	Counting and Equivalence Relation: Counting of set of pairs, Cartesian product, Sterling numbers, Bell number, Multinomial theorem

Scheme of Evaluation:

The Scheme of Evaluation shall be conduct of 10 sessions of slow learners from F.Y. B.Sc. Class.

Syllabus of Remedial Course for F.Y.Bsc

1. Mechanics
2. Properties of Matter
3. Basics of Heat
4. Introduction of Optics
5. Electricity
6. Magnetism
7. Electronics
8. Atomic Physics
9. Nuclear Physics
10. Vector Algebra

Syllabus of Remedial Course for F.Y.Bsc

1. Mechanics
2. Properties of Matter
3. Basics of Heat
4. Introduction of Optics
5. Electricity
6. Magnetism
7. Electronics
8. Atomic Physics
9. Nuclear Physics
10. Vector Algebra

Syllabus of Remedial Course for F.Y.Bsc

1. Mechanics
2. Properties of Matter
3. Basics of Heat
4. Introduction of Optics
5. Electricity
6. Magnetism
7. Electronics
8. Atomic Physics
9. Nuclear Physics
10. Vector Algebra

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Remedial Course in Botany

'Elementary Botany'

(To be implemented from the academic year 2019-20)

Preamble of the syllabus

Revised syllabus for Remedial Course in Botany titled 'Elementary Botany' is meant to provide the slow and medium learners of F. Y. B. Sc. Botany with an effective method to come to grips with fundamental concepts in Plant sciences, thereby enabling a smooth transition into mainstream understanding of Under Graduate Botany syllabus. This course is designed to facilitate easy learning and eradication of any mental blocks about Botany.

The well- organized curriculum includes all the basic topics in Plant Sciences that are required to build a strong foundation for further study of Botany.

Objectives of the Course:

1. To introduce the learners to various plant groups from simple to the most advanced, understanding about the different characteristics of plant groups and their evolutionary relation.
2. To know the features and structure of plant body and various tissue systems
3. To understand the basic physiological processes pertaining to water relations and enzyme action.
4. To create awareness about the role of plants in ecosystems and it's functioning.
5. To develop sound understanding of basic Mendelian genetics as a foundation for advanced modern genetics.

Course Outcome: A student of F. Y. B. Sc. Botany upon completion of the Remedial Course will be enabled with:

1. Ability to identify basic plant groups, their characteristics and evolutionary relation.
2. Ability to study internal structures of plant organs and its applications in various allied processes.
3. Knowledge about plant physiology with reference to water relations and enzyme action.
4. Awareness and basic understanding about the role of plants in ecosystems and it's functioning.
5. Understanding about the basic concepts in Mendelian Genetics

Sr. No.	Heading	Particulars
1	Title of Course	Elementary Botany
2	Eligibility for Admission	Slow and Medium Learners of F. Y. B.Sc. Botany
3	Level	U.G.
4	Pattern	Regular Assessment
5	Status	Revised
6	To be implemented from Academic year	2019-2020

Unit I Plant Diversity

- Introduction to Algae: Characteristics and Classification
- Introduction to Fungi: Characteristics and Classification
- Introduction to Bryophytes: Characteristics and Classification
- Introduction to Pteridophytes: Characteristics and Classification
- Introduction to Gymnosperms: Characteristics and Classification
- Introduction to Angiosperms: Characteristics and Classification

Unit II Form and Function

- Basic Cell Biology: Structure of Eukaryotic Plant Cell
- Basic Anatomy: Types of Tissues and their organization
- Basic Ecology: Concept of Ecosystem, food chains, energy pyramids, ecological adaptations in plants.
- Basic Physiology: Concept of water relations and enzymes.
- Basic Genetics: Heredity and Variation. Mendelism.

A.C. No. _____



Janardan Bhagat Shikshan Prasarak Sanstha's

CHANGU KANA THAKUR

Arts Commerce and Science College, New Pancel

(AUTONOMOUS)

SYLLABUS

For

Remedial Course in Biochemical Pathways

(w.e.f. 2019-20)

Janardan Bhagat Shikshan Prasarak Santha's

Changu Kana Thakur Arts Commerce and Science College, New Panvel (Autonomous)

Department of Microbiology

Course: Remedial Course in Biochemical Pathways

Preamble:

This course is designed for T.Y.B.Sc. Microbiology learners, to be completed in ten hours. The course will help to simplify the concepts of biochemical pathways. It will cover basic aspects of biochemical pathways and tricks to remember molecular structures and reactions. The course will also cover important pathways in the metabolism of carbohydrates, lipids, proteins and nucleic acids. This course will help to overcome the fear of learners about biochemical pathways and will encourage them to understand different types of metabolism.

Course Rationale:

The purpose of this course is to simplify the conceptual understanding of biochemical pathways.

Couse Objectives:

- To simplify the concepts of biochemical pathways

Course Outcome:

By completing this course successfully, learners will overcome the fear of biochemical pathways and will develop interest in it.

Detail Syllabus

SN	Topic	Hrs
1	<ul style="list-style-type: none">Types of Pathway: Linear, Branched, Circular, constitutive, Inducible, catabolic, anabolicLink between catabolic and anabolic pathway	01
2	Common Reactions of metabolic pathways: Isomerisation, Epimerisation, Oxidation-Reduction, Group Transfer, Condensation, Hydrolysis, lysis	01
3	Bioenergetics: Gibbs Free Energy Change, High energy compounds Classification of Enzyme	01
4	Glycolysis and Entner Doudoroff pathway	01
5	Pentose Phosphate Pathway	01
6	TCA cycle, Glyoxylate Bypass, ETC	01
7	Fermentation pathway: Alcohol, Lactic acid, Butyric acid, Mixed acid, Acetone Butanol, Butanediol	01
8	Synthesis and β -oxidation of Fatty acids	01
9	Synthesis of Pyrimidine, Degradation of Purine nucleotides upto uric acid	01
10	Synthesis of Purine nucleotide	01

References:

1. Nelson and Cox, Lehninger's Principles of Biochemistry, 4th Edn.
 2. Gottschalk, Microbial Biochemistry
 3. Luberts Stryer, Biochemistry
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