

Solapur University,

Solapur

B.Sc. II

Entrepreneurship Science

(Semester III&IV)

Syllabus w.e.f. June- 2015

B.Sc. PART-II Entrepreneurship
(w. e. f. June 2015)
SEMESTER – III

Course Code	Title of the Course	Theory /Practical	Marks		Lecture / Practical Period	Credits
			Ext	Int		
Ent-301	Entrepreneurship Paper III (Principles of Business Management & Business Organization)	Theory	70	30	45	3
Ent-302	Entrepreneurship Paper IV (Advanced Accountancy & Auditing)	Theory	70	30	45	3
Ent-303	Industrial Chemistry Paper III (Analytical And Industrial Aspects of Inorganic Chemistry)	Theory	70	30	45	3
Ent-304	Industrial Chemistry Paper IV (Analytical And Industrial Aspects of Organic Chemistry)	Theory	70	30	45	3
Ent-305	Microbial Biotechnology Paper III (Genetics)	Theory	70	30	45	3
Ent-306	Microbial Biotechnology Paper IV (Fermentation Technology)	Theory	70	30	45	3

N.B.

- (i) The question paper should cover the entire syllabus. Marks allotted to questions should be in proportion to the number of lectures allotted to respective topics.
- (ii) All topics should be dealt with S.I. units.
- (iii) Industrial tour/visit is prescribed.
- (iv) Use of scientific calculator is allowed.

B.Sc. II (Entrepreneurship)
Semester: III
Entrepreneurship Paper-III
Principles of Business Management & Organization

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I: -Business Management

9

Definition, Nature and Importance, function, Managerial Process and roles of manager
School of management & F.W. Taylor, Henry Fayola, Charles Babej, Peter Ducker, Mary
Parker, Follett, Elton Mayo.

Unit II: -Business Planning & Decision making

9

Meaning & definition, Planning Process, Types of Planning, Features of Planning,
Steps in planning and Benefit of planning.
Meaning & Definition, Decision making Process, Types of Decision, nature of decision and
strategic decision.

Unit III: - Business Organization

9

Meaning & definition, Characteristics and Importance of organization, Types of Organization-
Staff and line organization, Structure of organization – Horizontal and vertical.

Unit IV: -Direction, staffing & Controlling

9

Meaning & definition, Characteristics and Importance of Direction, Methods of Staffing, Staff
training and appraisal system, Definition of control, types of control steps in control need for
control

Unit V: -Leadership and Motivation

9

Meaning & definition of motivation, Importance of motivation, Theory of motivation, Herzberg
two factor theory, theory X, Y&Z, financial and non financial incentives
Leadership: - Meaning, Importance, Functions and qualities of leader,
Managerial grid and leadership style

Reference Books:-

- Business Management – T. Ramaswamy
- Management – Stephen P. Robbins & Marry Cowler
- Modern management Practices – Dr. A.K.Gavai
- Principles and Practices of Management – Amrita Singh
- Business Organization and Management- B.P.Singh &T.N Chhabr

B.Sc. II (Entrepreneurship)
Semester: III
Entrepreneurship Paper-IV
Advanced Accounting & Auditing

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I: Financial Accounting with Tally:	10
Company creation, Ledger creation, Accounts configuration, Accounts classification, Accounts Master Creation, Voucher Types and Classes, Accounts vouchers VAT (Value Added Tax)Introduction to VAT, VAT Master, Vouchers and Transactions, VAT on MRP.	
Unit II: Final Account & Insurance Claims	08
Bank, Bank reconciliation statement Loss of Stock and Loss of Profit by Fire	
Unit III: Fund flow & Cash flow Statement	08
Statement of Changes in Financial, Position on Cash Basis and on Working Capital Basis	
Unit IV: Auditing	09
Meaning, nature, scope and objectives, Types of Audit – Internal Audit and External Audit, Internal Check Appointment, Qualifications, Disqualifications, Removal and Remuneration of an Auditor of a Limited Company; Statutory Audit Report	
Unit V: Vouching	10
Meaning, need and importance, vouching of cash and Credit transactions, Verification and Valuation of Assets and Liabilities, Special features in respect of Audit of Co-operative Societies, Bank, and Charitable Trust and Institutions	

Reference Books:

1. Advanced Accountancy – Shukla and Gerewal.
2. Steps in Advanced Accountancy – Maheshwari.
3. Principles of Management Accounting – Manmohan Goyal.
4. Management Accounting – Haneef Mukharji.
5. Financial Accounting - Haneef Mukharji.
6. Tally. ERP 9(Training Guide) Ashok K. Nandani
7. Tally 9 -Vishnu Priya Shing
8. Practical Auditing – B.N. Tandon.
9. Principles of Auditing – De Paula.
10. Principles and practice - Saxena

B.Sc. II (Entrepreneurship)
Semester: III
Industrial Chemistry Paper-III
Analytical and Industrial Aspects of Inorganic Chemistry

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I: Theory of Volumetric analysis: 9

1. Introduction, Terminology :- Titrant, Titrand, standard solution, Titration, Indicator, Equivalence point, End point, Primary standard, Secondary standard.
2. Theory of Acid-Base indicator:
 - A .Colour change Interval
 - B.Theories-Ostwald's theory & Quinoid theory,
3. Neutralization curve and choice of indicator for following titrations:
 - A) Strong acid and Strong Base
 - B) Strong Acid and Weak Base
 - C) Weak Acid and Strong Base
4. Complexometric titration:
 - A. General account,
 - B. Types of EDTA Titrations (in detail direct titration) ,
 - C. Metallochromic Indicator w.r.t. Eriochrome Black-T

Unit II: Theory of Gravimetric Analysis: 9

1. Introduction
2. Precipitation – Conditions of Precipitation, Physical nature of Precipitate.
3. Process of precipitation – i) Nucleation ii) Crystal growth iii) Digestion
4. Coprecipitation and Post precipitation
5. Role of Organic precipitants in gravimetric analysis –
 - i) DMG ii) Aluminon iii) 8- hydroxy quinoline.

Unit III: Catalysis: 9

1. Introduction
2. Classification of catalytic reactions: Homogeneous & Heterogeneous.
3. Types of catalysis
4. Characteristics of catalytic reactions
5. Mechanism of catalysis: i) Intermediate compound theory ii) Adsorption theory.
6. Industrial applications of catalysis

Unit IV: Manufacture of Industrial Heavy Chemicals: 9

1. Introduction definition of heavy chemicals
2. Physicochemical Principles & manufacture of following:
 - a. Ammonia by Haber process.
 - b. Sulphuric acid by contact process.
 - c. Sodium carbonate by Solvay process.

Unit V: Corrosion and Passivity. 9

1. Corrosion:-

- a. Introduction, with types of corrosion.
 - b. Electrochemical theory of corrosion.
 - c. Factors affecting the corrosion:i) Position of metal in emf series.ii) Purity of metal
iii) Effect of moisture.iv) Effect of oxygen. v) Hydrogen over voltage
 - d. Methods of protection of metals from corrosion.
2. Passivity:-a. Definition.b. Types of passivity.c. Oxide film theory.d. Application of passivity.

Reference Books:

1. Advanced Inorganic Chemistry by Satyaprakash, Tuli, Basu (S. Chand and Co.)
2. Inorganic Chemistry by Puri and Sharma (S. Chand & Co.)
3. University General Chemistry by CNR Rao (McMillan)
4. Industrial Chemistry by B.K. Sharma.
5. Environmental Chemistry by S.M. Khopkar (Wiley Eastern Ltd.)
6. Inorganic Chemistry by D.E. Shriver, P.W. Atkins and C.H. Longford, Oxford.
7. Environmental chemistry by B.K. Sharma.
8. Text book of Quantitative Inorganic Analysis by A.I. Vogel.
9. Vogel's Text Book of Quantative Inorganic Analysis – Bassett, Denny, Jefferyy Mendham.
10. Basic concepts of Analytical Chemistry by S.M. Khopkar.

B.Sc. II (Entrepreneurship)
Semester: III
Industrial Chemistry Paper-IV
Analytical and Industrial Aspects of Organic Chemistry

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I: Soaps and Detergents:

9

1. Soap:

- i) Raw materials.
- ii) Types of soaps.
- iii) Manufacture of soap - Hot process.
- iv) Cleansing action of soaps.

2. Detergents:

- i) Raw materials.
- ii) Types of detergents - Cationic, anionic, amphoteric, neutral detergents.
- iii) Preparation of teepol and deriphat.

3. Comparison between soaps and detergents.

Unit II: Sugar and Alcohol Industry:

10

- 1 Manufacture of raw cane sugar.
- 2 Refining of raw sugar.
- 3 White sugar.
- 4 By-products of sugar industry.
 - A Manufacture of ethyl alcohol from molasses
 - B Rectified spirit, denatured spirit absolute alcohol and power alcohol.
 - C By-products of alcohol industry.

Unit III: Textile chemistry:

10

- 1 Introduction, classification of fibers.
- 2 Sizing: i) object of sizing, sizing ingredients and their functions.
 - ii) General idea of properties of starch, softeners, synthetic adhesives.
- 3 Bleaching: i) Brief study of the outline of the process of bleaching cotton and synthetic material.
 - ii) General idea of processes like singeing, desizing, scouring.
- 4 Dyeing: Study of dyeing of cellulosic material and synthetic fibers with dyes like direct, vat, reactive and disperse dyes

Unit IV: Drugs: Synthesis and Applications:

9

- i) Antimalerials - Paludrin.
- ii) Antituberculars - Isoniazide and Ethambutol.
- iii) C. N. S. drugs - Phenobarbitone.
- iv) Antidiabetics - Tolbutamide.
- v) Antiinflammatory drugs - Ibuprofen.
- vi) Antibiotic - Chloromycetin.

Unit V: Agrochemicals.

7

6.1 General idea of agrochemicals including pyrethroids.

6.2 Synthesis and uses of the following agrochemicals :

i) Indole-3-acetic acid.

ii) Monocrotophos.

iii) Methoxychlor.

iv) Ethoppan.

v) Carbaryl.

Reference Books:

1. Organic Chemistry - R. T. Morrison and R. N. Boyd Prentice Hall of India Private limited New Delhi. 6th Edition.
2. A text book of Organic Chemistry - Arun Bahl and B. S. Bahl S. Chand and Company Ltd. 6th Edition.
3. Chemicals for crop improvement and pest management - Green, Hartly and West.
4. Chemistry of pesticides - K. H. Buchel (T. W.).
5. Medical Chemistry - Burger.
6. Basic Concepts of Analytical Chemistry - S. M. Khopkar, Wiley Eastern Ltd. Bombay.
7. Industrial Chemistry - R. K. Das, Asia Publishing, Mumbai.
8. Quantitative Organic Chemistry - A. I. Vogel, Pearson Edn. Delhi.
9. Medical Chemistry - A. Burger, John Wiley, New York.
10. Biotechnology and Applied Microbiology - Alani and Moo-Young.
11. Green Chemistry: Environment Friendly alternatives - Rashmi Sanghi and M.M. Srivastava (Eds) (c) 2003 Narosa Publishing House, New Delhi, India.
12. Textile science - J. T. Marsh

B.Sc. II (Entrepreneurship)
Semester: III
Microbial Biotechnology Paper-III
Genetics

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I **05**

Mendelian genetic-laws of Mendelian genetic, variation on dominance.

Unit II **10**

Chromosomes- Structural organization of chromosome, Histone and Non Histone proteins, Karyotypes

Chromosomal aberration Translocations, inversions, deletions and duplications
Aneuploidy and euploidy

Mutation- definition, mutagenic agent, molecular basis of mutation, Induced and spontaneous mutation.

Unit III **06**

Gene transfer method-

Recombination, Fate of exogenote, Transformation, Conjugation, Transduction.

Unit III **09**

Linkage: Introduction, types, phases linkage group detection of linkage significance

Crossing over: features, theories types, factors affecting crossing over.

Unit IV **07**

Transposable elements: -definition, types.

Gene Interaction and epistasis:-Types of gene interactions.

Unit V **08**

Biostatistics :Introduction, Mean, Mode, Median, Probability, Null hypothesis, Chi-Square test, T test X2 test, degree of freedom, Probability level and problems.

REFERENCES:

1. Bergey's Manual of Determinative Bacteriology- Breed and Buchanan
2. General microbiology – Stanier
3. General microbiology – Pawar and Dagainawala Vol I and II
4. Introduction of Biostastics .
5. Molecular Biology of Gene – J.D. Watson
6. Recombinant DNA – J.D. Watson
7. Microbiology - Davis

B.Sc. II (Entrepreneurship)
Semester: III
Microbial Biotechnology Paper-IV
Fermentation Technology

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I **08**

Industrial Production of Antibiotics:-

Classification and Types of Antibiotics,
Industrial Production of Penicillin & Streptomycin,

Unit II

Industrial production of Alcoholic Beverages: - **09**

Alcohol Fermentation from molasses, Beer Production from Barley Malt
Wine Production from grapes

Unit III:

Industrial production of Enzymes-Amylase, Organic acid- Citric Acid **10**

Amino acid- L-Lysine, Vitamin- Vit. B12

Unit IV

1. Production of Single Cell Proteins **10**

2. Production of Bioinsecticides: - *Bacillus thuriangiensis*.

3. Biofertilizer production: - *Azotobacter* and *Rhizobium*

Unit V

Biogas production, Biofuel production **08**

Treatment, Recycling and disposal of Industrial Waste

REFERENCE BOOKS:

1. Principles of fermentation technology – Stanbury and Whitekar
2. Dairy Technology – Sukumar De
3. Biochemistry – Fox and Nelson
4. Industrial Microbiology – Prescott and Dunn
5. Microbial technology – Pepler
6. Food Microbiology – R.C. Dubey, D.K. Mahashwari
7. Advances in Biotechnology – S.W. Jogdand.
8. Textbook of Biotechnology – R.C. Dubey,
9. Biotechnology – B.D. Singh
10. Industrial Microbiology – Casida

B.Sc.II. Entrepreneurship
(w.e.f. June 2015)
Semester IV

Course Code	Title of the Course	Theory /Practical	Marks		Lecture / Practical Period	Credits
			Ext	Int		
Ent-401	Entrepreneurship Paper V (Corporate Accounting & Professional Ethics)	Theory	70	30	45	3
Ent-402	Entrepreneurship Paper VI (Marketing Decision & International Marketing)	Theory	70	30	45	3
Ent-403	Industrial Chemistry Paper V (Analytical And Industrial Aspects of Physical Chemistry)	Theory	70	30	45	3
Ent-404	Industrial Chemistry Paper VI (Industrial Aspects of Applied Chemistry)	Theory	70	30	45	3
Ent-405	Microbial Biotechnology Paper V (Molecular Biology)	Theory	70	30	45	3
Ent-406	Microbial Biotechnology Paper VI (Food & Dairy Technology)	Theory	70	30	45	3
Ent-201	*Lab course I is Based on Ent-201(Paper no III,IV,V,VI)	Practical	140	60	8 hrs/week	4
Ent-202	**Lab course II is Based on Ent-202(Paper no III,IV,V,VI)	Practical	140	60	8 hrs/week	4
Ent-203	***Lab course III is Based on Ent-203(Paper no III,IV,V,VI)	Practical	140	60	8 hrs/week	4

****** Practical Examination will be conducted at the end of Semester IV and duration is twelve (12) hours for two successive days (11.00am to 5.00pm)**

B.Sc. II (Entrepreneurship)
Semester: IV
Entrepreneurship Paper-V
Corporate Accounting & Professional Ethics

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I: Issue and forfeiture of Shares

09

Issue and forfeiture of Shares, Reissue of Forfeited Shares, Valuation of Shares
Valuation of Shares – Intrinsic Value Method, Market & Fair Value Method

Unit II: Final Accounts of Companies & Holding Company

09

Preparation of Final Accounts of Companies in vertical form as per the Provisions of
Schedule VI to the Indian Companies Act, 1956

Unit III: Corporate Restructure & Liquidation of Companies

08

Amalgamation, Absorption and Mergers, External Reconstruction of Companies
Accounting for liquidation of Companies – Preparation of Liquidator's Final Statement
of Account.

Unit IV: Concept and Theories of Ethics & Corporate Governance

10

Meaning & Definition, Personal & Business Ethics, Morality, Etiquette & Professional
codes

Meaning & Definition of Corporate Governance, Corporate culture, corporate social
responsibility, creating ethical organization, code of conduct

Unit V: Globalization & Functional Areas of Ethics

09

Global Corporation, Factors Facilitating Globalization, Role of MNC, Marketing Ethics,
Ethics in -HRM, Financial management, IT etc

Reference Books:

- ❖ Business Ethics – A.C.Fernando Pearson
- ❖ Business Ethics – Dr. A.K.Gavai, Himalaya.
- ❖ Advanced Accountancy by M.C. Shukla, T.S. Grewal & S.C. Gupta
- ❖ Corporate Accounting by S. N. Maheshwari
- ❖ Advanced Accounting by H. Chakra borty
- ❖ Advance Accounting by Jain Narang

B.Sc. II (Entrepreneurship)
Semester: IV
Entrepreneurship Paper-VI
International Marketing & Marketing Decisions

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I: - Designing Product

08

Product Planning & Development, Product Life cycle, Product idea & its process, Product Positioning – Element of positioning, Segmentation & Targeting, Types of Product- commodity product, technology product, customized product, Product line & product mix, Brand Management

Unit II: -Pricing, Distribution & Communication Decision

12

Definition, price decision and its objectives, Factors influence price decision, Methods of pricing, information needed for pricing, price sensitivity & price war
Types of Distribution Channel, Channel Strategy,
Whole sellers – Types & Function, Retailer – Meaning & Forms- supermarket and hyper market, Physical Distribution
Marketing communication, Sales promotion, sponsorship & Exhibitions,
Defining advertising strategy in competitive market, public relation and publicity

Unit III: -Introduction to Global Marketing & Global marketing Environment

09

Market Selection, Emergence of Global Marketing, Use of website in marketing, Global Brand and Multinational Company
Economic, Social, political and Government, competition environment, Technology Environment

Unit IV: -Consumer Behavior

08

Meaning of consumer behavior, Determinants of consumer behavior, Need of buyer, Models of behavior, buying process & Customer loyalty

Unit V: - New Trends in Marketing

08

Foreign Trade – steps involved in import & Export
Internet marketing, E- commerce, E- marketing

Reference Books:-

1. Marketing Management- V S Ramaswamy & S Namakumari
2. Marketing Management- Arun Kumar & N Minakshi
3. Global Marketing – S.A.Sherlekar & V.S.Sherlekar
4. International marketing- Fransis Cherunitarn

B.Sc. II (Entrepreneurship)
Semester: IV
Industrial Chemistry Paper-V
Analytical and Industrial Aspects of Physical Chemistry

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I: Electrochemistry:

10

1. Introduction, conduction of electricity, Types of conductors: electronic and electrolytic.
2. Explanation of terms: Conductance, Specific resistance, specific conductance, Equivalent conductance, Molecular conductance.
3. Variation of specific and equivalent conductance with concentration, Equivalent conductance at infinite dilution (Mention Onsager equation, $\lambda_v = \lambda_\infty - b \sqrt{c}$ graph)
4. Migration of ions, Hittorf's rule, Transport number, Determination of transport number by moving boundary method, factors influencing transport number: Nature of electrolyte, concentration, temperature, complex formation and Degree of hydration.
5. Definition of pH and pOH, buffer solution, types of buffer, pH of buffers: Henderson's equation for acidic and basic buffers. (Derivation is not expected.)
6. Numerical problems.

Unit II: Potentiometry:

09

1. Introduction.
2. Detail study of calomel, quinhydrone and glass electrodes and their use in determination of pH.
3. Potentiometric titrations: Classical and analytical methods for locating end points, Advantages of potentiometric titrations,
 - i) Acid - Base titrations. ii) Redox - titrations. iii) Precipitation titrations.
4. Basic circuit of direct reading potentiometer.

Unit III: Conductometry:

09

1. Measurement of conductance by Wheatstone bridge, Basic circuit of D.C. Wheatstone bridge, use of alternating current, conductivity water, Different types of conductivity cells, cell constant and its determination.
Experimental determination of specific, equivalent and molecular conductance's.
2. Conductometric acid-base titrations
 - i. Strong acid against strong base
 - ii. Strong acid against weak base
 - iii. Weak acid against strong base.
 - iv. Weak acid against weak base.

Unit IV Colourimetry:

08

1. Introduction.
- 1.2 General discussion of theory of colorimetry : Lambert law, Beer's law (Derivation not expected), Terms used in Colorimetry, Application of Beer's law, Deviation from Beer's law.
- 1.3 Classification of methods of 'colour' measurement or comparison, Photoelectric photometer method - single cell photo-electric colorimeter.

Unit V: Flame Photometry:

09

1. General principles.
2. Instrumentation: Block diagram, Burners: Total consumption burner, premix or laminar-flow burner, Lundergraph burner, Mirrors, Slits, Monochromators, Filters and Detectors.
3. Applications in qualitative and quantitative analysis.
4. Limitations of flame photometry

Reference Books:

1. Text book of Quantitative Inorganic Analysis - By A. I. Vogel (ELBS and Longman 3rd Edition).
2. Instrumental methods of Chemical analysis by Willard, Merit and Dean.
 3. Instrumental methods of Chemical analysis by Chatwal and Anand (Himalaya Publication).
4. Principles of electroplating and eletroforming by Blum and Hogaboom, Mac Graw - Hill Book Co. 3rd Edn.
5. Vogel's text book of Quantitative Inorganic Analysis by Bassett and Denny etc. ELBS and Longman 4th Edition.
6. Principles of Physical Chemistry by Puri, Sharma, Pathania, Shobhanlal Naginchand and Company, Jalandar.
7. Text Book of Physical Chemistry by S. Glasstone, Macmillan India Ltd.
8. Elements of Physical Chemistry by D. Lewis and S. Glasstone (Macmillan).
9. An Introduction to Electrochemistry by S. Glasstone.
10. Physical Chemistry by W. J. Moore.

B.Sc. II (Entrepreneurship)
Semester: IV
Industrial Chemistry Paper-VI
Industrial Aspects of Applied Chemistry

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I: Metallurgy: Iron and Steel.

12

- 1 Introduction: - Terms used in Metallurgy, Metallurgy, Mineral, Ore, Gangue, Flux, Slag
- 2 Occurrence of metals: Types of Ores.
- 3 Steps Involved in Metallurgical Processes:
 - A) Concentration of Ores:
 - i) Physical Methods:-
 - a) Gravity separation method, b) Magnetic separation method, c) Froth floatation method.
 - ii) Chemical Methods:
 - a) Calcinations b) Roasting
 - B) Reduction: Mention various methods of reduction. Extraction of Iron by blast furnace
 - C). Types of steel and its alloys.
 1. Manufacture of Steel – a) Bessemer process b) L. D. Process
 2. Heat treatment on steel.

Unit II: Electroplating:

09

1. Introduction.
2. Electrolysis, Faraday's laws, Cathode current efficiency.
3. Basic principles of electroplating, cleaning of articles.
4. Electroplating of Nickel and Chromium.
5. Anodizing.

Unit III: Fertilizers:

09

1. Classification of fertilizers.
2. Qualities of an ideal fertilizer.
3. Manufacture of Common fertilizers such as:
 - a. Ammonium sulphate
 - b. Urea
 - c. Super phosphate and
 - d. Triple super phosphate
 - e. Potassium fertilizers
4. Pollution caused by fertilizers.

Unit IV: Glass Materials:**08**

1. Raw materials
2. Manufacturing methods:
Pot furnace
Tank furnace
3. Types of Glass: a. commercial Glass, b. Special glass and c. Coloured glass.

Unit V: Ceramic Materials:**07**

1. Introduction
2. Classification
3. Properties of ceramics
4. Cement : Types of cements and their applications
5. Manufacture of Portland cement by wet process.

Reference Books:

1. Principles of electroplating and electroforming by Blum and Hogaboom, Mac Graw - Hill Book Co. 3rd Edn.
2. Vogel's text book of Quantitative Inorganic Analysis by Bassett and Denny etc. ELBS and Longman 4th Edition.
3. Elements of Physical Chemistry by D. Lewis and S. Glasstone (Macmillan).
4. Principles of Physical Chemistry by Maron and Lando (Amerind).
5. An Introduction to Electrochemistry by S. Glasstone.
Advanced Inorganic Chemistry by Satyaprakash, Tuli, Basu (S. Chand and Co.)
6. Inorganic Chemistry by G.S. Manku Tata Mc. Graw Hill.
7. University General Chemistry by CNR Rao (McMillan)
8. Industrial Chemistry by B.K. Sharma.
9. Environmental Chemistry by S.M. Khopkar (Wiley Eastern Ltd.)
10. Industrial Chemistry: R K Das.

B.Sc. II (Entrepreneurship)
Semester: IV
Microbial Biotechnology Paper-V
Molecular Biology

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I	09
DNA replication- Definition, Enzyme involved in Replication, DNA Polymerases Replication in Prokaryotic Cell & Eukaryotic Cell, Rolling Circle Model	
Unit II	10
Transcription- In Prokaryotic Cell & Eukaryotic Cell, RNA Polymerases, DNA motif, enhancer, Activator, Post transcriptional modification	
Translation	
Unit III	09
Gene Regulation in Prokaryotes: Lac Operon, trp operon	
Unit IV	08
DNA Repair Mechanism- Direct repair, Excision repair, Mismatch repair, SOS repair	
Unit V	09
Methodology Isolation of Nucleic acid, Markers- RFLP RFPD, DNA Sequencing – Enzymatic & Chemical Method.	

Reference Books:

1. Advances in Biotechnology – S.W. Jogdand.
2. Textbook of Biotechnology – R.C. Dubey,
3. Biotechnology – B.D. Singh
4. Industrial Microbiology – Casida
5. Industrial Microbiology – Patel A.H.

B.Sc. II (Entrepreneurship)
Semester: IV
Microbial Biotechnology Paper-VI
Food & Dairy Technology

Total Marks: 100 (70+30)

Credits -3

Contacts hours:45

Unit I: Food & Dairy Microbiology **10**

Microbiology of Food and milk, Examination of milk & food, determination of bendrow, sorbet food, determination of number Thermophilic and psychrophilic bacteria, determination of efficiency - food, sugar, protein, grading of milk.

Unit II Dairy Technology **10**

Introduction dairy technology, definition of milk, composition factor affecting of milk, Food & nutritive value of milk. Manufacturing, packaging and storage of pasteurized milk, flavor defect of milk their cases & manufacturer of sterilized milk. Homogenized milk, flavored milk, tanned milk.

Unit III **7**

Cream: Definition, composition food & nutritive value, production and uses.

Butter: Introduction, definition, classification, composition, defect of butter uses.

Unit IV **8**

Cheese: Introduction, definition, history, composition and types, manufacturer of cheese & its uses.

Ice Cream: Introduction, definition, composition, method of manufacture, packing, hardening, storage, uses.

Unit V Food Technology **10**

Food as substrate for microorganism, general principles and different method of Preservation of food, microbiology of meat production, fish & poultry foods & vegetable, Canned food, process of canning of food, microbial food poisoning, preservation and control

REFERENCE BOOKS:

- 1) Food Microbiology (1995)-Adams M.R.and Moss, M.O., New Age International Limited.
- 2) Food Microbiology –Frazier, W.C., Westhoff, D.C. IVth edition, Tata McGraw Hill Publisher.
- 3) Industrial Microbiology by A. H. Patel, Mac Millan India Pvt. Ltd.
- 4) Modern Food Microbiology VIth edition- James M Jay. An Aspen publication.
- 5) Applied Dairy Microbiology –Elmer Marth and James Steele 2nd edition, publisher Marcel Dekker Inc.
6. Dairy Technology – Sukumar De
7. Industrial Microbiology – Prescott and Dunn
8. Food Microbiology – R.C. Dubey, D.K. Mahashwari
9. Industrial Microbiology – Casida
10. Industrial Microbiology – Patel A.H.

SYLLABUS FOR LAB COURSES
B.Sc.II Entrepreneurship Science
Sem.III & IV
(8 periods, per week / batch) Total marks 200(140+60)

1. Practical Related to UNIT I & II in Marketing
 2. Collection of Newspaper / Magazine cuttings related to Management.
 3. Prepare a Study Plan for academic year.
 4. A study of Organization Structure of any Organization.
 5. Preparation of a organization chart.
 6. Study of selection process of any organization.
 7. A study of buying behavior for any organization.
 8. Design marketing research plan.
 9. A study of product life cycle of any product.
 10. A study of marketing channel of any company.
 11. A visit to export unit and prepare a report.
 12. Share Market study
 13. Preparation of Final account of Company & Bank
 14. Exercise on holding company
 15. Draw a gateway of tally menu
 16. Generalized Entries and Display Balance sheet, Cash and Bank Ledger
 17. Problem based on Tally practical
- Practical (visit report)**
- 15) Plant and machineries in organization.
 - 16) Working efficiency of organization.
 - 17) Quality control & management.

INDUSTRIAL CHEMISTRY
Sem.III & IV
(8 periods, per week / batch) Total marks 200(140+60)

A Volumetric Experiments:

1. Prepare 0.1N Standard solution of $K_2Cr_2O_7$. Standardize the given FAS solution using prepared Potassium dichromate solution.
2. Determine the percentage of Nitrogen in the given sample of nitrogenous fertilizer (Urea or Ammonium Sulphate).
3. To investigate the adsorption of oxalic acid or Acetic acid from aqueous solution by activated charcoal and examine the validity of freundlich and Longmuir isotherms.
4. Estimation of copper from brass by using standard sodium thio sulphate solution.
5. Estimation of zinc in brass solution.
6. Estimation of aspirin (acetyl salicylic acid).
7. Estimation of ethyl benzoate.
8. Estimation of sucrose.
9. Determine the COD of given water sample.
10. Determine the BOD of the given water sample.
11. Analysis of commercial vinegar.

B Preparations:

1. Preparation of benzoic acid from benzamide.
2. Preparation of methyl orange.
3. Laboratory preparation of soap.
4. Preparation of Ferrous ammonium sulphate from ferrous sulphate.
5. Preparation of p-Bromo acetanilide from given acetanilide..
6. Preparation of tetra amine copper (II) sulphate from copper sulphate.
7. Preparation of phthalimide from phthalic anhydride.

C Gravimetric Analysis:

1. Determine the amount of Fe as a Fe_2O_3 from the given solution of FAS and sulphuric acid, gravimetrically.
2. Determine the amount of Ba as a $BaSO_4$ from the given solution of barium chloride and free hydrochloric acid gravimetrically.
3. Estimation of rate of corrosion of aluminium in acidic and basic medium.

D Instrumental Analysis:

1. Verify the Ostwald's dilution law for weak acid conduct metrically.
2. Strong acid strong base Conductometric titration.
3. Determination of pH of the buffer solutions potentiometrically.
4. Determination of dissociation constant of weak acid pHmetrically.
5. Verify the Lambert- Beers law for copper solution and determine the concentration of given copper sample.

B.Sc.II (Entrepreneurship Science)

MICROBIAL TECHNOLOGY

LAB COURSE III Sem.III & IV

(8 periods, per week / batch) Total marks 200(140+60)

- 1) Karyotypes analysis
- 2) Isolation of plasmid DNA
- 3) Isolation of Genomic DNA
- 4) Isolation of Plant DNA
- 5) Analysis for chi square test.
- 6) Study of bacterial conjugation.
- 7) Calculate mean, mode and median of the any sample.
- 8) Separation of plasmid DNA
- 9) Problem based on Mendelian genetics
 - Law of dominance
 - Law of Segregation
 - Law of Independent Assortment
- 10) Isolation of Mutants
- 11) Isolation of Bacteriophage
- 12) Determination of fat from the given sample of milk.
- 13) Determination of the casein proteins from the milk sample.
- 14) Determination of sugar from the milk sample.
- 15) Determination of benzoate or sorbet content of food.
- 16) MBRT Test. & Phosphates test
- 17) MPN of milk.
- 18) Isolation and identification of *Salmonella* group of microorganism from milk/food.
- 19) Production of Amylase enzyme by using *Bacillus species*
- 20) Production of beer
- 21) Isolation antibiotic producing microorganism from soil sample.
- 22) Production of Biofertilizer- *Azotobacter* and *Rhizobium*

Solapur University, Solapur
Nature of Question Paper for Credit-Grading Semester Pattern
• Faculty of Science
B.Sc.II-Entrepreneurship
(w.e.f. June 2015)
Time: - 3.0 hrs. Total Marks- 70

Q. No.1) Multiple choice questions (10)

- 1) -----
a) b) c) d)
- 2)
3)
4)
5)
6)
7)
8)
9)
10)

Q.No.2) Answer any five (out of seven) of the following (15)

- i)
ii)
iii)
iv)
v)
vi)
vii)

Q.No.3) Answer any three (out of four) of the following (15)

- i)
ii)
iii)
iv)

Q.No.4) Answer any three (out of four) of the following (15)

- i)
ii)
iii)
iv)

Q.No.5) Write short notes on any three (out of four) of the following (15)

- i)
ii)
iii)
iv)

University Examination Practical Question Paper

Q.1) Staining.	15
Cell wall/ Capsule/ Volutin granules.	
Q.2) SPC of soil/ water/ sewage/ milk.	15
Q.3) Physiology.	05
Indol/ Methyl Red/ Voges prosker/ Citrate Utilization/ Catalase	
H2S/ Caseinase/ Glucose/ MBRT.	
Q.4) Demonstration .	05
Centrifugation/ Sterilization/ pH adjustment of media/ Colony characters	
From mixed population	
Q.5) Sterility testing/ effectiveness of antiseptics/ obtaining culture/	05
Q.6) Spotting.	10
Q.7) Journal.	05
Q.8) Oral	10

Internal Examination Practical Question Paper

03 Practicals having 20 marks each should be assign.