Solapur University, Solapur

B. Sc. Part – III Entrepreneurship

Syllabus

Semester V & VI

(CBCS system)

(w.e.f. June 2018)

SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Science

Credit and Grading System

(w.e.f. June 2018)

- **Title of the Course:** B.Sc. Part-III
- **Subject: Entrepreneurship**

Preamble:

India is becoming one of the top mounting economies in the world and therefore it has become crucial that new and innovative business ideas get developed to fuel this growth. Entrepreneurship in the recent times is gaining importance. It is considered to be a solution for creating wealth, generating employment and providing new goods and services. Entrepreneurship, therefore, has become one of the most promising career options for students. Solapur University, Solapur have taken up an initiative to promote entrepreneurship as a distinct discipline by conducting a degree programme namely B.Sc. Entrepreneurship. Solapur University is the only university in the state of Maharashtra to run the B. Sc. Entrepreneurship entire course since 2008. Entrepreneurship is the interdisciplinary course conducted under faculty of science in which science interconnected subjects are taught along with commerce and management subjects. Under science subjects Chemistry, Biotechnology and Microbiology are taught focusing mostly the industrial aspects. Aspects of commerce and management have been practiced to design and develop a comprehensive business plan to start a small business. Basic concepts as well as laws of various managements and commerce are provided to make successful entrepreneur. Under this special incubator managerial skill, marketing skill, policy document preparation, human resources development, balance sheet, cost, profit as well as loss statement are acquired by the students to become global leaders. Many of the students are well established entrepreneurs and achieved success and respect enabling them to serve the society also in better way.

Objectives of Course:

1. Prepare entrepreneurs with the tools and encouragement they need to start and nurture a successful business.
2. Provide networking opportunities and community building among entrepreneurs.
3. Advocate the importance of innovation in technology and its role in improving the Indian economy.
4. Understand the entrepreneurial decision making process from business model design to the launch of the new venture.
5. Develop a wide range of strategic, financial and human resource planning skills necessary to the new venture planning process.
6. Provide an atmosphere in which course participants can apply entrepreneurial and teamwork skills in finding, evaluating and beginning the process of implementing new venture concepts.
7. Sharpen the presentation skills necessary to effectively communicate new venture ideas to potential investors.
8. Apply the scientific, commercial and management skills for Startup new business in the field of industrial chemistry, Industrial Microbiology and Industrial Biotechnology.

The Credit and Grading System:

With the view to ensure worldwide recognition, acceptability, horizontal as well as vertical mobility for students completing undergraduate degree, Solapur University has implemented Credit and grading system of Evaluation at Undergraduate level. Credit is a numerical value that indicates students work load (Lectures, Lab work, Seminar, Tutorials, Field work etc.) to complete a course unit. In most of the universities 15 contact hours constitute one credit. The contact hours are transformed into credits. As per present norms, there are 3 contact hours per paper (subject) per week which works out to be 45 contact hours per paper (subject) per semester.

In Solapur University, for B.Sc.-III Entrepreneurship, there are 4 papers and Compulsory English. For B.Sc.-III Entrepreneurship, there are 3 contact hours per paper (subject) per week for each paper and Compulsory English carry 4 contact hours per week. Therefore, total contact hours per week are 16. Each paper has 45 contact hours, which are transformed into 3 credits. Moreover, the grading system of evaluation is introduced for B.Sc. course where in process of Continuous Internal Evaluation is ensured. The candidate has to appear for Internal Evaluation of 30 marks and University Evaluation for 70 marks. It is 70+30 pattern of evaluation. It is applicable for theory and practical as well. The details regarding this evaluation system are as under.

Conversion of marks into Grades:

A table for the conversion of the marks obtained by a student in each paper (out of 100) to grade and grade point is as given below:

Sr. No.	Range of Marks	Grade	Grade Point
1	80-100	O	10
2	70-80	A+	9
3	60-69	A	8
4	55-59	B+	7
5	50-54	B	6
6	45-49	C+	5
7	40-44	C	4
8	<39	FC	0(Failed in Term Exam)
9	<39	FR	0(Failed in Internal Assessment)

1. **Grade Point Average at the end of the Semester (SGPA)**

$$SGPA = \frac{(G_1 \times C_1) + (G_2 \times C_2) + \ldots\ldots\ldots\ldots..}{\Sigma Ci}$$

(Σ Ci= The total number of credits offered by the student during a semester)

2. **Cumulative Grade Point Average (CGPA)**

$$CGPA = \frac{(G_1 \times C_1) + (G_2 \times C_2) + \ldots\ldots\ldots\ldots..}{\Sigma Ci}$$

(Σ Ci= The total number of credits offered by the student upto and including the semester for which CGPA is calculated.)

3. **Final Grade Point Average (FGPA)**

It will be calculated in the similar manner for the total number of credits offered for the completion of the said course.

Where: C_i = Credits allocated for the i^{th} course.

G_i = Grade point scored in the i^{th} paper (subject)

4. Conversion of average grade points into grades:

SGPA/CGPA/FGPA	**Letter Grade**
9.5 – 10	O
8.5 – 9.49	A+
7.5 – 8.49	A
6.5 – 7.49	B+
5.5 – 6.49	B
4.5 – 5.49	C+
4.0 – 4.49	C
<3.99	FC / F
	FR

Syllabus Structure:

1. The University follows semester system.
2. An academic year shall consist of two semesters.
3. Each B.Sc. course shall consist of three years i.e. six semesters.
4. B.Sc. Part-III Entrepreneurship shall consist of two semesters: Semester V and Semester VI. In semester V, there will be four papers of 100 marks for each with compulsory English. Similarly in Semester VI there will be four papers of 100 marks for each with compulsory English.

The scheme of evaluation of performance of candidates shall be based on University assessment as well as College internal assessment as given below. For B.Sc. Part-III Entrepreneurship semester V & VI the internal assessment will be based on Unit tests, Home assignment, viva, practicals, project work etc. as given below. Practical course examination of 100 marks for each course shall be conducted at the end of VI semester. The practical examination of 100 marks shall also consist of 70 marks for University practical assessment and 30 marks for college internal assessment. For University practical examination both the examiners will be External and will be appointed by the University. The internal practical assessment shall be done as per scheme given below.

Scheme of Evaluation

As per the norms of the grading system of evaluation, out of 100 marks, the candidate has to appear for college internal assessment of 30 marks and external evaluation (University assessment) of 70 marks. The respective B.O.S. may decide the nature of college internal assessment after referring to scheme given below or may be used as it is.

Semester – V

Theory: (100 marks)

University Examination (70 marks): No. of theory papers: 5

Internal Continuous Assessment: (30 marks)

Scheme of marking: 20 marks – Internal test

10 marks – Home assignment / tutorials / seminars /
group discussion / viva / field visit / industry visit.

Semester – VI

Theory: (100 marks)

University Examination (70 marks): No. of theory papers: 5

Internal Continuous Assessment: (30 marks)

Scheme of marking: 20 marks – Internal test

10 marks – Home assignment / tutorials / seminars /viva / industry visit.

Practical Examination: (100 marks)

University Examination (70 marks): No. of practical course 4 (3 + 1 Project Work)

Internal Continuous Assessment: (30 marks)

Scheme of marking: 20 marks – Internal test on any four practicals

10 marks- Lab Journal / Viva, attendance, attitude etc. In addition, the students shall have to complete a project work on a topic (Management course related topic) chosen by him/her in consultation with the project coordinator because this course is providing science and management related knowledge. The project report should be submitted before practical examination and presented at the time of practical examination. This project work carries 100 marks.
Thus the course shall be of total 1400 marks including English.

7. Passing Standard

The student has to secure a minimum of 4.0 grade points (Grade C) in each paper. A student who secure less than 4.0 grade point (39% or less marks, Grade FC/FR) will be declared fail in that paper and shall be required to reappear for respective paper. A student who failed in University Examination (theory) and passed in internal assessment of a same paper shall be given FC Grade. Such student will have to reappear for University Examination only. A student who fails in internal assessment and passed in University examination (theory) shall be given FR Grade. Such student will have to reappear for both University examination as well as internal assessment. In case of Annual pattern/old semester pattern students/candidates from the mark scheme the candidates shall appear for the same 70 marks of external examination and his performance shall be scaled to 100 marks.

8. ATKT Candidate passed in all papers except 6 (six) papers combined together of semester III and IV of B.Sc. Part-II Entrepreneurship examination and clearly passed in B.Sc. Part-I Biotechnology shall be permitted to enter upon the course of Semester V of B.Sc. III Entrepreneurship.

Solapur University, Solapur
Faculty of Science
Choice Based Credit System (CBCS)
(W.e.f.2018-19)
Structure for B. Sc-III Entrepreneurship

Subject/ Core Course Microbiology	No. of papers/ Practical	Hrs/week			Total Marks Per Paper	UA	CA	Credits
		L	T	P				
Class :→	**B.Sc.- III Semester - V**							
AECC-4 (English)	Paper-III	4			100	70	30	4
DSE-1-A	Ent 501: Business Finance	3	--	--	100	70	30	3
DSE-2-A	Ent 502: Human Resource Management	3	--	--	100	70	30	3
DSE-3-A	Ent 503: Spectroscopic methods	3	--	--	100	70	30	3
SEC-1	Ent 504: Advances in Fermentation Technology	3	--	--	100	70	30	3
	OR							
SEC-2	Ent 504: Wine Technology	3	--	--	100	70	30	3
Total		**16**	--	--	**500**	**350**	**150**	**16**
Class :→	**B.Sc.- III Semester - VI**							
AECC-5 (English)	Paper-IV	4			100	70	30	4
DSE-1-B	Ent 601: International Business	3	--	--	100	70	30	3
DSE-2-B	Ent 602: Organizational Behavior	3	--	--	100	70	30	3
DSE-3-B	Ent 603: Techniques in Industrial Chemistry	3	--	--	100	70	30	3
SEC-3	Ent 604: Genetic Engineering	3	--	--	100	70	30	3
	OR							
SEC-4	Ent 604: Techniques in Plant Tissue Culture	3	--	--	100	70	30	3
Total (Theory)		**16**	--	--	**500**	**350**	**150**	**16**

Practical Course (Annual)

Paper No.	Title of Paper	Hrs/Week			Paper Marks	UA	CA	Credits
		L	T	P				
Ent Lab-301	Practicals in Entrepreneurship		-	5	100	70	30	3
Ent Lab-302	Project Work		-	5	100	70	30	3
Ent Lab-303	Practicals in Industrial Chemistry		-	5	100	70	30	3
Ent Lab-304	Practicals in Industrial Microbiology, Wine technology and plant tissue culture		-	5	100	70	30	3
Total				**20**	**400**	**280**	**120**	**12**

SOLAPUR UNIVERSITY, SOLAPUR
Faculty of Science
Credit System Structure for
B.Sc. – III Entrepreneurship
Theory
Semester – V

DSE-1-A: Ent 501: Business Finance

40 Lectures

Unit	Content	Lectures
I	**Introduction to Business Finance:** Concept, Nature, Scope, Objective and Importance. **Sources of Business Finance :** Long term equity shares, Preference shares, Debentures, Bonds, Loan from banks, Public deposits, Sources of working capital finance **International financial institutions:** International Monitory Fund (IMF), International Bank for Reconstruction & Development (IBRD/ World Bank), International Finance Corporation (IFC), Multinational Investment Guarantee Agency.	**10 L**
II	**New Dimensions in Business Finance:** Lease financing, Meaning, Importance, Types of lease financing, Lease V/s Buy decision, Problems and Prospects of leasing in India. **Venture Capital:** Concepts, Process of Investment and exit route, venture capital in India. **E- Banking:** Introduction	**10 L**
III	**Business finance :** International finance, International finance environment, Global capital structure **Foreign exchange:** Foreign exchange, Foreign exchange market, convertibility of rupees & its implications. Foreign Exchange Regulation Act (FERA) **Marketing of Securities:** Issue of securities, Public issue, Steps in public issue, Right issue and private placement. **Stock Exchange:** Definition, Functions, Stock exchange in India, BSE and NSE and their working, Trading on stock exchange, Online trading. Securities Exchange Board of India (SEBI)	**10 L**
IV	**Financial planning:** Concept of financial plan, Objective of financial planning, types & steps in financial planning, **Capital budgeting:** Concept of capital budgeting, methods of ranking project – payback period method, internal rate of return, present value method.	**10 L**

Books for Reference *:*

1. Essential of Business Finance - Dr.R. Shrivastav
2. Business Finance - P.V. Kulkarni
3. Corporation Finance - S.C. Kuchal
4. Investment and securities market in India - V.A. Audhani
5. Corporate Finance Policy - Guthmann & Dougall.
6. Stock exchange and investment - Raghunathan.
7. Stock exchange in India - K.C. Gupta

DSE-2-A: Ent 502: Human Resource Management **40 Lectures**

Unit	Content	Lectures
I	**Nature and Scope of Human Resource Management:-** Meaning, Definitions, Objectives, Functions and Importance of Human Resource Management, Role of Human Resource Management **Recruitment:-** Definition, Objectives, External & Internal sources of recruitment, Job Analysis, Job description, Job Specification.	**9L**
II	**Selection process:-** Introduction of selection, Meaning of selection, Concept of selection, Essential of Selection procedure, Steps in selection procedure, recent trends in selection, Job satisfaction. **Training & Development:-** Meaning of training, importance of training, Need & Objectives of training, Advantage of training, Training Method, Meaning of development, Principles of development.	**11L**
III	**Internal & External mobility:** Internal mobility:- need & purpose. Promotion: meaning, types, purpose, Transfer: Meaning, types, reasons, benefits, problems. Demotions: reasons & principles. External Mobility:- meaning & types **Career Planning & Developments** Meaning succession planning. Elements of career development programme, Steps in career development system, advantage& limitations	**11L**
IV	**Employee Benefits:-** Provident Fund, Gratuity, E.S.I. Maintenance Allowance, Convenience Allowance, Employee Health and Safety, Accident prevention. **Performance appraisal:-** Meaning, purpose, Need of performance appraisal, methods of P. A., Use of P. A., and Problems of P.A.Who will appraise?	**9L**

References:

1. Personnel & HRM - P.Subha Rao
2. Managing Human Resources - Arun Monappa
3. Human Resource and Personnel Management - K. Ashwathappa
4. Management of Human Resource - R.S. Dwivedi
5. Human Resource Management - Biswajeet Patanayale
6. Human Resource Management - Ian Beardwen & Len Holden

DSE-3-A: Ent 503: Spectroscopic Methods **40 Lectures**

Unit	Content	Lectures
I	**Ultra -Violet absorption:** Spectroscopy: Introduction, Beer - Lambert Law, Types of electronic transitions, Terms, used in U V spectroscopy: Chromospheres, Auxochrome, Batho chromic, Hypsochromic, Hyper chromic and Hypo chromic shifts, Effect of conjugation on position of UV bands, Calculation of max by Woodard - Fieser rules of conjugated dienes and enones. Applications of UV spectroscopy: Determination of structure and stereochemistry (cis and trans).	10
II	**Infrared Spectroscopy :** Introduction, Principle of I spectroscopy, Fundamental modes of vibration, Types of vibration Hooke's law, conditions for absorption of radiation and selection rule, Fundamental group regions of I R spectrum, Functional group region, Finger print region, Characteristic absorption of various functional groups, Applications of I R spectroscopy : Determination of structure, Identification of functional groups simple spectral problems based on I.R.	10
III	**NMR Spectroscopy:** Introduction, proton magnetic resonance H spectroscopy, principles of PMR spectroscopy, magnetic and non-magnetic nuclei, Theory of PMR - spectroscopy - spinning nuclei, magnetic moment and magnetic field, processional motion of nuclei without mathematic model nuclear resonance. NMR instrument - schematic diagram shielding and dishelding, chemical shift, measurement of chemical shift by delta scale and tau scale, TMS as reference, Advantages of TMS, peak area (Integration) spin-spin splitting (ntl rule) definition of coupling constant J value of first order coupling. PMR spectra of ethanol, acetaldehyde,1,1,2-tribromoethane, ethyl compounds using PMR spectroscopic data (supporting I R & U V data to be given)	10
IV	**Mass spectroscopy.** Introduction, Theory of mass spectroscopy, Mass spectrometer - schematic diagram, formation of ions by ionization, types of ions with at least one example. Applications of mass spectroscopy. i) Determination of molecular weight. ii) Determination of molecular formula.	10

References:

1. Spectroscopy of Organic Compounds - P.S. Kalsi.
2. Elementary Organic Absorption Spectroscopy - Y.R. Sharma
3. Spectroscopy - V.M. Parikh.

SEC-1: Ent 504: Advances in Fermentation Technology 40 Lectures

Unit	Content	Lectures
I	**Quality Assurance and Validation:** Good manufacturing practices and safety- Quality management, personal, premises and equipment, documentation, production, quality control, contract manufacturing and analysis, complaints and product recall, self inspection. Introduction to GLP and its principles. **IPR and Patents:** Understanding of Intellectual Property Rights- Introduction, History of Patent Protection, Rationale behind Patent System, WTO, TRIPS and WIPO, An Overview of the IPR Regime- Patents, Trademarks, Copyrights, Industrial Designs, Geographical Indication, Semiconductor Circuits & Layout Design, Plant Variety & Farmer's Right Act, Undisclosed Information - Trade Secrets.	14
II	**Bioethics and Biosafety:** Biosafety guidelines: Risk and risk assessment: Biosafety levels, laboratory biosecurity concepts: Pre-clinical and clinical trials, Basics of bioethics principles, international codes and guidelines in India, Ethics in post-genomic era.	10
III	**Recombinant fermentation products:** Production of vaccines: subunit vaccines, peptide vaccine, Attenuated vaccines, Vector vaccines directed against viruses and bacteria, Preparation of toxoid from a toxin, Recombinant proteins production: Insulin, Interferon, Cultivation of Mushroom, Vinegar production.	8
IV	**Fermentation products & bioprocesses:** Bio products and other Processes: Natural Biopreservatives (Bacteriocin/Nisin), and Biopolymers (Pullulan/Xanthan Gum and PHB), Genetic Engineering in Microbes: Microbial biosynthesis of Rubber, Production of Solvents: Acetone-Butanol and Glycerol.	8

References:

1. Casida L. E. (1991). Industrial Microbiology, New Age international Ltd.
2. Crueger W. and Crueger A. (2000). Biotechnology: A textbook of Industrial Microbiology. 2nd edition.Panima Publishing Co. New Delhi.
3. Patel A. H. (1996). Industrial Microbiology. 1st edition, Macmillan India Limited.
4. Stanbury P. F, Whitaker A. and Hall S. J. (2006). Principles of Fermentation Technology. 2nd edition, Elsevier Science Ltd.
5. Peppler H.J., Perlman D. (2004). Microbial technology-Fermentation Technology, second edition, Volume I and II, Academic Press.

SEC-2: Ent 504: Wine Technology **40 Lectures**

Unit	Content	Lectures
I	**History and Introduction:** Wine history, Grape varieties, Physiology of matured grapes, Wine classification, Quality of wine, Chemical constituents of Grapes and Wine, Importance of Grapes and wine, Wine and Health, Wine Laws and Authentications.	**10**
II	**Basic Procedures of Wine Production:** Pre-fermentation Practices- Destemming, Sorting, Crushing, Supraextraction, Maceration (Skin Contact), Dejuicing, Pressing, Must Clarification, Adjustments to Juice and Must, Alcoholic Fermentation- Fermentors, Fermentation, Biochemistry of Alcoholic Fermentation, Yeasts, Environmental Factors Affecting Fermentation.	**10**
III	**Post-fermentation Treatments and Related Topics:** Wine Adjustments- Acidity and pH Adjustment, Sweetening, Dealcoholization, Flavor Enhancement, *Sur lies* Maturation, Color Adjustment, Blending, Stabilization , Fining, Clarification, Aging, Effects of Aging, Factors Affecting Aging, Rejuvenation of Old Wines, Aging Potential, In-barrel Fermentation, Advantages and Disadvantages of Oak Cooperage, Cork Bottle Closures, cork Faults, Alternative Bottle Closures, Cork Insertion, Bottles and Other Containers, Glass Bottles, Bag-in-box Containers.	**10**
IV	**Sensory Perception and Wine Assessment:** Visual Sensations, Color, Clarity, Viscosity, Spritz (Effervescence), Tears, Taste and Mouth-feel, Taste, Factors Influencing Taste Perception, Mouth-feel, Taste and Mouth-feel Sensations in Wine Tasting, Odor, The Olfactory System- Odorants and Olfactory Stimulation, Sensations from the Trigeminal Nerve, Odor Perception, Factors Affecting Olfactory Perception, Odor Assessment in Wine Tasting, Off-odors, Wine Assessment and Sensory Analysis, Conditions for Sensory Analysis, Wine Score Cards, Tasters.	**10**

References:

1. Wine Science: Principles and Applications, 3rd ed, Ronald S. Jackson, Academic Press
2. Introduction to Wine Laboratory: Practices and Procedures, Jean L. Jacobson, Springer.
3. Principles and practice of winemaking Boltan R. B. (1996) Chapman and Hall.
4. Wine microbiology Science and Technology. Glaudio Delfins & Formica J. V. (2001)
5. Home Winemaking, Young J.O. (1980) Washington State University, Pullman, Washington.
6. Principles of Weed Science, Rao V.S. (1994) Oxford & IBH Pub.Co.Pvt.Ltd.
7. Australian Wine from the wine to the glass. Patric II & Peter Gago (1997) South Australia.
8. The art & science of Wine, James Halliday and Hough Johnson. (1992) Mitchell Beazley International Ltd. London.
9. Handbook of Enology I & II , Pascal Ribereau, Denis Dubourdieu et.al (2000). John Wiley and Sons, Ltd., New York.

B.Sc. Biotechnology Part – III
Theory Syllabus Semester VI

DSE-1-B: Ent 601: International Business

40 Lectures

Unit	Content	Lectures
I	**International Business:** Definition, Evaluation, Nature of International Business, International Business approaches. **Theories of International Business**: - Absolute cost advantage, comparative cost advantage, and comparative cost advantage with money. Problems of International Business. **Foreign Trade Procedures**-Export procedure, Import procedure, Financing technique, Export promotion. **Balance of payment –** Introduction, Components of balance of payment, Disequilibrium in Balance of payment	**11L**
II	**International Economic Environment**:- International Trade Policy and Relations, Tariffs, Subsidies, Import Quota, Voluntary Export restraints. Administrative policies and International law and Business firms. **Globalisation** Emerging global economy. Drivers of Globalisation, Globalisation Debates: Advantages & Disadvantages of Globalisation, Globalisation in India **Multinational Corporation** Definition, concept, factors that contributed for the Growth of MNCs, Advantages & Disadvantages of MNCs, Role of MNC's Economic Development	**10L**
III	**Modes of entering in International Business :** Modes of entry, Exporting, Licensing, Franchising, Contracts, Turnkey Projects, Mergers, Acquisitions and Joint Venture. World Trade Organization and Trade Blocks Economic Integrations, Free Trade Area, Custom unions common markets, Economic Unions, GATT, EEC, ASEAN, SAARC, SAFTA Concept of e-commerce: Models: B-B, B-C, C-C Foreign Direct Investment (FDI): Meaning, factors influencing, FDI in India.	**8L**
IV	**Getting started on Basic SAP R/3 Elements:** The client or SAP customer, the clients representative, the SAP consultant, the SAP R/3 business application software architecture, financial accounting and controlling (FI/CO) modules, the sales and distribution (SD) module, the materials management (MM) modules, the plant maintenance (PM) and service management, the production planning (PP) module, the project system (PS) module, the human resources (HR) module, the SAP retail model, industry solutions (IS) modules, the ASAP roadmap.	**11L**

References:

1. Frame works International II edition - Rajer Benneet,
Financial Times Management - Pitmen Publishing Landon
2. International Business : Test & Cases
By P.Subba Rao - Himalaya Publishing House
3. Global Marketing : S.A. Sherlekar & V.S. Sherlekar.
4. E-business - Kittel Amer
5. E-commerce - David Whitely

DSE-2-B: Ent 602: Organizational Behavior 40 Lectures

Unit	Content	Lectures
I	**Introduction to Organization Behavior:** Definition, Historical, Evolution of O.B., Nature & Scope, Learning Organization, Types of Learning Organization. **Individual & Organization Behavior:** Individual Differences & their uses in industries, Individual process, thinking memory, leaving, emotion, intelligence and ability. **Group Dynamics:** Nature of groups, Type of group, Why do people join group, Group development, usefulness of group in organization, Determinants of group behaviour, Group Structure ,Individual and Inter Personal behavior, job satisfaction, time management .	11L
II	**Power & Political Behavior** Power Dynamics, Sources of power, the effective use of power, Power tactics, Politics- Essence of politics, Types of political activity, Ethics of power & politics **Personality:** Nature of Personality, Types of personality, Theories of personality-trait theory, social learning theory, Maslos theory, personality & O. B. **Perceptions**: Perceptions- Meaning & Definitions, Factors influencing perceptions, perceptual process, perception & O.B.	10L
III	**Motivation:** Nature of motivation, Importance of motivation, Theories of Motivation- Maslews theory, Hereberg theory, Expectancy theory, Goal setting theory **Work Stress:** What is stress, the stress experience, work stress model-Stressors, sources of stress, individual level of stressors, group level stressors, Coping the stress.	10L
IV	**Electronic commerce environment and opportunities:** Background, the electronic commerce environment, electronic market Place technologies, conclusion. **Modes of Electronic commerce:** Overview, Electronic data interchange, Migration of open EDI, Electronic commerce with WWW / internet, Commerce Net Advocacy, Web commerce going forward. **Electronic cash and Electronic payment:** Internet monetary payment and security requirements, payment and purchase order process, online electronic cash.	9L

References:

1. Organizational Behavior - Meshane, (Tata Mcgraw Hill)
2. Organizational Behavior - Luthan
3. Human Behavior at Work - Keith Devis
4. Organizational Behavior - Robins (Prentice Hall)
5. Organizational Behavior - Baron & Greenberg (Prentice Hall)
6. Organizational Behavior - Suja Nair (Himalaya Publisher)
7. Organizational Behavior - K. Ashwathappa (Himalaya Publisher)

DSE-3-B: Ent 603: Techniques in Industrial Chemistry

Unit	Content	Lectures
I	**Chromatography:** Introduction, General Principle, Classification, Paper Chromatography, Column chromatography, Thin Layer Chromatography, Gas Chromatography, High pressure liquid chromatography.	**10**
II	**Electroplating:** Electrolysis, Faraday's law, cathode current efficiency, basic principles of electroplating cleaning of articles, electroplating of nickel and chromium, Anodizing.	**10**
III	**Green Chemistry:** Introduction, twelve principles of green chemistry zeolites - Friedel craft's alkylation and acylation, oxidation of benzene to phenol and benzoquione, Reduction of benzoquinone to hydroquinone, Biocatalytic reactions, hydroxylation and oxidation using enzymes microwave assisted reactions.	**10**
IV	**Fire Hazards** Types of fires - class A, class B, class C & class D, Fire extinguishers Classification water and water base extinguishers. i) Portable fire extinguishers, ii) Soda acid extinguishers, iii) Antifreeze extinguishers, iv) Foam, v) Dry Chemicals, CO2, and Halon-1301.	**10**

References:

1. Basic Concepts of Analytical Chemistry - S.M.Khopkar, Wiley Eastern Ltd. Mumbai
2. Advanced Organic Chemistry - B.S. Bahl and Arun Bahl, S.Chand Comp. Delhi.
3. A Text book of Engineering Chemistry - Shashi Chawala.
4. A Text book of Engineering Chemistry - Jain & Jain.
5. Industrial Chemistry - B.K. Sharma
6. Engineering Chemistry - Paradkar
7. Physical Chemistry - G.M. Barrow, International Student Edition, Mc.Graw Hill.
8. University General Chemistry - C.N.R Rao. Macmillan.
9. Physical Chemistry - R.A. Albery, Wiley Eastern Ltd.
10. Principles of Physical Chemistry - S.H. Maron, C.H. Prutton 4th Edition.
11. Instrumental of Molecular Spectroscopy - C.. Banwell - Tata McGraw Hill
12. Text Book of Physical Chemistry - S.Glasstone, Macmillan India Ltd.
13. Element of Physical Chemistry - D.Lewis and S.Glassure (Macmillan)
14. .Essential of Physical Chemistry - Bahl and Tuli (S.Chand)

SEC-3: Ent 604: Genetic Engineering **40 Lectures**

Unit	Content	Lectures
I	**Tools for Genetic Engineering:** Cloning Tools: Restriction modification systems: Types I, II and III. Mode of action, nomenclature, applications of Type II restriction enzymes in genetic engineering, DNA modifying enzymes and their applications: DNA polymerases. Terminal deoxynucleotidyl transferase, kinases, phosphatases, and DNA ligases, Cloning Vectors: Definition and Properties, Plasmid vectors: pBR and pUC series, Bacteriophage lambda and M13 based vectors, Cosmids, BACs, YACs, Use of linkers and adaptors, Expression vectors: *E.coli* lac and T7 promoter-based vectors, yeast Yip vectors, Baculovirus based vectors, mammalian SV40-based expression vectors.	12
II	**Gene Transformation and Transfection:** Transformation of DNA: Chemical method, Electroporation, Gene delivery: Microinjection, electroporation, biolistic method (gene gun), liposome and viralmediated delivery, *Agrobacterium* - mediated delivery, DNA, RNA and Protein analysis: Agarose gel electrophoresis, Southern- and Northern–blotting techniques, dot blot, DNA microarray analysis, SDS-PAGE and Western blotting.	10
III	**Amplification, sequencing, construction and screening of cDNA:** PCR: Basics of PCR technology, Sanger's method of DNA Sequencing: traditional and automated sequencing, shotgun sequencing, Genomic and cDNA libraries: Preparation and uses, Screening of libraries: Colony hybridization and colony PCR, Chromosome walking and chromosome jumping.	10
IV	**Applications:** Products of recombinant DNA technology: Products of human therapeutic interest - insulin, hGH, antisense molecules. Bt transgenic - cotton, brinjal, Gene therapy, recombinant vaccines, protein engineering and site directed mutagenesis.	8

References:

1. Brown TA. (2010). Gene Cloning and DNA Analysis. 6th edition. Blackwell Publishing, Oxford,U.K.
2. Clark DP and Pazdernik NJ. (2009). Biotechnology: Applying the Genetic Revolution. Elsevier Academic Press, USA
3. Primrose SB and Twyman RM. (2006). Principles of Gene Manipulation and Genomics, 7th edition. Blackwell Publishing, Oxford, U.K.
4. Sambrook J and Russell D. (2001). Molecular Cloning-A Laboratory Manual. 3rd edition. Cold Spring Harbor Laboratory Press
5. Wiley JM, Sherwood LM and Woolverton CJ. (2008). Prescott, Harley and Klein's Microbiology. McGraw Hill Higher Education
6. Brown TA. (2007). Genomes-3. Garland Science Publishers
7. Primrose SB and Twyman RM. (2008). Genomics: Applications in human biology. Blackwell Publishing, Oxford, U.K.

SEC-4: Ent 604: Techniques in Tissue Culture 40 Lectures

Unit	Content	Lectures
I	**Introduction to Animal tissue culture:** History, Laboratory design, Characteristics of animal cell in culture, Culture media: Natural media, synthetic media – serum containing media, serum free media, balanced salt solution, and complete media. Physicochemical properties of media, Sterilization of media.	10
II	**Animal Culture techniques:** Primary cell culture: Cell Separation-Mechanical, Enzymatic. Criteria for subculture, Types of organs culture, Cell synchronization- Cell separation by physical means and chemical blockade. Establishment of cell lines- Cell lines selection and routine maintenance of cell lines, Cell counting and monitoring.	10
III	**Plant tissue Culture Techniques:** Concept of cell theory, cellular totipotency, milestones in plant tissue culture. Culture Medium: Nutritional requirements of the explants, PGRs and their invittro. Callus Culture: Introduction, Principle, Protocol, Factors affecting, Morphology and Internal structures, Genetic variation, Application and limitations. Suspension Culture: Introduction, Principle, Protocol, Types, Growth and measurement, Synchronization, Applications and limitations.	10
IV	**Plant Organ Culture:** Introduction, Principle, Protocol, Factors affecting applications & limitations with reference to root tip culture, Leaf Culture, Shoot tip and meristern culture, ovary and ovule culture. Anther and Pollen Culture: Introduction, Protocol, Factor affecting, Applications & limitations. Micro Propagation: Introduction, Stages of Micro propagation, Factors affecting, Applications & limitations.	10

References

1. Animal Tissue culture : J. Paul
2. Culture of animal cell 3rd edition-R Ian Freshney
3. Animal cell culture- R.W.Masters
4. Animal biotechnology-M.M.Ranga
5. Animal biotechnology-R.Sasidhara
6. Animal cell culture technique-Ed. Martin Clynes Springer
7. Cell growth & division a practical approach-Ed. R. B. Sega& R.L.Press
8. Introduction to plant tissue culture- M.K. Razdan
9. Plant tissue culture-Theory & practice-S. S. Bhojwani & M.K. Razdan
10. Plant tissue culture-Kalyankumar Dey
11. Biotechnology- B.D. Singh
12. A text book of Biotechnology- R.C. Dubey
13. Biotechnology- H.S. Chawla

B.Sc. Entrepreneurship Part – III
Practical Syllabus
Annual

Ent Lab-301 Entrepreneurship **70+30=100**

Sr. No.	Name of Practical
1	To study problems of International Business by visiting a global export unit.
2	To visit an experts unit and study export & imports rules & regulations.
3	To study any two franchising and Turnkey Projects.
4	To study recent Policies of GATT, ASEAN, SAARC, SAFTA.
5	To visit organization doing e-business & collect information.
6	To collect cuttings from news-papers relating to business finance.
7	To study sources of working capital finance.
8	To visit stock exchange and collect information.
9	To study problems and prospects of leasing in India by visiting organization.
10	To study venture capital.
11	To study role of H.R. Manager, Interactions with two H.R. Mangers.
12	To study training methods for employees in an organization.
13	To study motivation and disciplinary policy of any organization.
14	To prepare questionnaires for testing job satisfaction and conduct interview of Employees of any two industries.
15	To study Health & Safety provisions for employees in any organization.
16	To study, How to learn Organization.
17	A) To study individual differences and their suitability for jobs in any Organization. B) To study I.Q. its chart and collect information.
18	To study time management schedule of employees in any organization.
19	To study the stress and suggest remedies to the working people.
20	To study organization culture and its development in any organization.

Ent Lab-302 Entrepreneurship

Project Work **70+30=100**

The project reports are to be prepared by the students on the subjects in consultation with the Project coordinator in the year. The project work is carried out in group of maximum 2-3 students or individually. The coordinator will guide the students in selecting the topic of the project. The report shall be signed by the coordinator and shall be submitted to the University at the time of the University Practical examination of B.Sc. Part III. The student should visit any industry related to syllabus and submit the report of their visit at the time of practical examination in practical course Ent Pr.302: Project Work. The report should be duly certified by the Head of the Department. The Project Work carries 100 marks.

Ent Lab-303 Practicals in Industrial Chemistry

Sr.	Name of Practical
1	To estimate the amount of acetone from given sample iodeometrically.
2	To estimate the amount of nitro group form the given solution of m-nitro aniline ($SnCl_2$ reduction method)
3	To determine the amount of acid & ester in the given mixture of acid & ester.
4	To estimate the amount of acid and amide from the given mixture of acid and amide.
5	Preparation of benzene azo B-napthol from B-napthaol.
6	Preparation of Benzoic acid from Benzamide.
7	To estimate Fe^{3+} ions by thicoyanate method using colorimeter.
8	To estimate Fe^{3+} ions by Salicylate methd.
9	To determine the normality of strong acid by titrating it against given strong alkali by potentiometric method.
10	To determine the dissociation constant of monobasic acid (acetic acid) by conductometrically.
11	To determine the normality of the given weak acid by titrating it against the strong alkali conductiometrically.
12	Determination of titrable acidity in the given sample of milk or Lassi using supplied sodium hydroxide (standard oxalic acid solution to be prepared to standardize the given sodium hydroxide solution.)
13	Determination of percentage of magnesium in the given sample of talcum powder using given solution of EDTA.
14	Preparation of Sodium cuprous thiosulphate.
15	Determination of % purity of a sample containing Ferrous Ammonium Sulphate using given

	solution of Potassium dichromate.
16	Preparation of Potassium tris-oxalato aluminate.
17	Determination of % purity of a sample containing Tetramine copper (II) sulphate by using given solution of Sodium thiosulphate.

Ent Lab-304 Practicals in Industrial Microbiology and Biotechnology

Sr.	Name of Practical
1	Protein estimation of mushroom
2	Vinegar production
3	Estimation of sugar from fruit juice
4	Estimate pH and titratable acidity of fruit juice
5	Estimation of alcohol percentage in the wine
6	Isolation of yeast genomic DNA
7	Calculation of molecular weight of digested DNA
8	Study Southern Blotting
9	Perform the SDS-PAGE of mixed protein sample
10	Introduction to tissue culture laboratory
11	Aseptic Manipulation - Washing, Capping, Packing & sterilization, Laminar air flow Operation & General Precautions
12	Preparation of Plant and Animal Tissue Culture Media
13	Isolation of plant explants using aseptic techniques
14	Establishment of Callus culture
15	Aseptic seed germination
16	Establishment of suspension culture
17	Establishment of Anther culture
18	Establishment of Ovule culture
19	Enumeration of animal cells using hemocytometer
20	Establishment of Micropropagation- subculturing/multiplication/rooting

Examination Pattern

The examination for theory papers are conducted semester wise while for practical conducted annually once as per University Time Table.

A) Theory Examination: Nature of Theory question paper for each theory paper.

Equivalence of Subjects I Sem V for B. Sc. III Entrepreneurship CBCS syllabus

Sr.No.	Name of the old paper		Name of the new paper	
1	Compulsory English		AECC-4 (English)	Paper-III
2	Ent501	Business Finance	DSE-1-A	Ent 501: Business Finance
3	Ent502	Human Resource Management	DSE-2-A	Ent 502: Human Resource Management
4	Ent503	Spectroscopic methods	DSE-3-A	Ent 503: Spectroscopic methods
5	Ent504	Advances in Fermentation Technology	SEC-1	Ent 504: Advances in Fermentation Technology
6	-	-	SEC-2	Ent 504: Wine Technology

Equivalence of Subjects I Sem VI for B.Sc.III Entrepreneurship CBCS syllabus

Sr.No.	Name of the old paper		Name of the new paper	
1		Compulsory English	AECC-5 (English)	Paper-IV
2	Ent-601	International Business	DSE-1-B	Ent 601: International Business
3	Ent-602	Organizational Behavior	DSE-2-B	Ent 602: Organizational Behavior
4	Ent-603	Techniques in Industrial Chemistry	DSE-3-B	Ent 603: Techniques in Industrial Chemistry
5	Ent-604	Genetic Engineering & Techniques in Plant Tissue Culture	SEC-3	Ent 604: Genetic Engineering
6	-	-	SEC-4	Ent 604: Techniques in Plant Tissue Culture

Equivalence of Practical course for B.Sc.III Entrepreneurship CBCS syllabus

Sr.No.	Name of the old paper		Name of the new paper	
1	EntLab-301	Practical's in Entrepreneurship	Ent Lab-301	Practicals in Entrepreneurship
2	EntLab-302	Project Work	Ent Lab-302	Project Work
3	EntLab-303	Practical's in Industrial Chemistry	Ent Lab-303	Practicals in Industrial Chemistry
4	EntLab-304	Practical's in Industrial Microbiology and Industrial Biotechnology	Ent Lab-304	Practicals in Industrial Microbiology, Wine technology and plant tissue culture

Solapur University, Solapur
Nature of Question Paper For Semester Pattern
Faculty of Science

Time:- 3 hrs **Total Marks-70**

Q. No.1) Multiple choice questions **(14)**

1) ----------
a) b) c) d)
2)
3)
4)
5)
6)
7)
8)
9)
10)
11)
12)
13)
14)

Q.No.2) Answer any SEVEN of the following **(14)**

i)
ii)
iii)
iv)
v)
vi)
vii)
viii)
ix)

Q.No.3 A) Answer any Two of the following **(10)**

i)
ii)
iii)

B) Write the Answer/Solve/Problem/Note **(04)**

Q.No.4) Answer any Two of the following **(14)**

i)
ii)
iii)

Q.No.5) Answer any Two of the following **(14)**

i)
ii)
iii)

B) Practical Examination

a) The practical examination will be conducted on four (4) consecutive days for not less than 6 hours on each day of the practical examination.
b) Each candidate must produce a certificate from the Head of the department in his/her college stating that he/she has completed in a satisfactory manner the practical course on the guidelines laid down from time to time by Academic council on the recommendation of Board of studies and has been recorded in his/her observation in the laboratory journal and written a report on each exercise performed. Every journal is to be checked and signed periodically by a member teaching staff and certified by the Head of the department at the end of the year. Candidate is to produce their journal at the time of practical examination. Candidate has to visit two places of Biotechnological interest (Pharmaceutical industry, Dairy, Research institutes, Food Processing industry, Botanical or Zoological place etc.) and submit the visit report dully signed by tour in-charge and duly certified by Head of the department at the time of practical examination in practical course Ent Lab-302: Project Work.

Distribution of Marks for practical examination: (Practical course Ent Lab-301, Practical course Ent Lab-303, Practical course Ent Lab-304**)**
1) Two major experiment: 30 marks (i.e. 15 marks each)
2) Two minor experiment: 20 marks (i.e. 10 marks each)
4) Viva voce: 10 marks
3) Journal: 10 marks
Total marks 70 marks

Distribution of Marks for Project Work (Practical course Ent Lab-302**):**
The report shall be examined by the External examiners (appointed by the University) who will assign marks out of 50 for project work as follows:
1) Selection of the project topic - 10 marks
2) Project methodology - 10 marks
3) Project Writing - 15 marks
4) Oral presentation and Viva - 15 marks
Total: 50 marks
Tour report: 20 marks

Total marks 70 marks

Practical Course Ent Lab-301: 100 Marks [UA: 70 Marks + CA: 30 Marks]

Practical Course Ent Lab-302**:** 100 Marks [UA: 70 Marks + CA: 30 Marks] [UA: 70 Marks + CA: 30 Marks (20 Marks: Internal entire year lab assessment+ 10 Marks- Field visit related to project topic)]
Practical Course Ent Lab-303: 100 Marks [UA: 70 Marks + CA: 30 Marks]
Practical Course Ent Lab-304 : 100 Marks [UA:70 Marks + CA: 30 Marks]

Total Marks: 400 marks

Theory and practical shall form separate heads of passing. The candidate shall be declared to have successfully completed the three year degree course only on passing in all the heads of passing of B.Sc. Part I, II and III.