Solapur University, Solapur

B. Sc. Part – III Entrepreneurship

Syllabus

Semester V & VI

(Credit and Grading System)

(w.e.f. June 2016)

SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Science

Credit and Grading System

(w.e.f. June 2016)

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

6. 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 /
group discussion / viva / field visit / 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.

Paper No.	**Title of Paper**	**Hrs/Week**			**Paper Marks**	**UA**	**CA**	**Credits**
		L	T	P				
21	Compulsory English	4	-	-	100	70	30	3
22	International Business	3	-	-	100	70	30	3
23	Organizational Behavior	3	-	-	100	70	30	3
24	Techniques in Industrial Chemistry	3	-	-	100	70	30	3
25	Genetic Engineering & Techniques in Plant Tissue Culture	3	-	-	100	70	30	3
Total		16			500			15

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
Credit System Structure for B.Sc. – III Entrepreneurship Theory

Semester – V

Paper No.	Title of Paper	Hrs/Week			Paper Marks	UA	CA	Credits
		L	T	P				
	Compulsory English	4	-	-	100	70	30	3
Ent501	Business Finance	3	-	-	100	70	30	3
Ent502	Human Resource Management	3	-	-	100	70	30	3
Ent503	Spectroscopic methods	3	-	-	100	70	30	3
Ent504	Advances in Fermentation Technology	3	-	-	100	70	30	3
Total		**16**			**500**			**15**

Semester – VI

Paper No.	Title of Paper	Hrs/Week			Paper Marks	UA	CA	Credits
		L	T	P				
	Compulsory English	4	-	-	100	70	30	3
Ent-601	International Business	3	-	-	100	70	30	3
Ent-602	Organizational Behavior	3	-	-	100	70	30	3
Ent-603	Techniques in Industrial Chemistry	3	-	-	100	70	30	3
Ent-604	Genetic Engineering & Techniques in Plant Tissue Culture	3	-	-	100	70	30	3
Total		**16**			**500**			**15**

Practical Course (Annual)

Paper No.	Title of Paper	Hrs/Week			Paper Marks	UA	CA	Credits
		L	T	P				
EntLab-301	Practical's in Entrepreneurship		-	5	100	70	30	3
EntLab-302	Project Work		-	5	100	100	-	3
EntLab-303	Practical's in Industrial Chemistry		-	5	100	70	30	3
EntLab-304	Practical's in Industrial Microbiology and Industrial Biotechnology		-	5	100	70	30	3
Total				**20**	**400**			**12**

Semester Examination; CA: College Assessment by Internal Continuous Examination.
UA (University Assessment): University Theory paper shall be of 70 marks for 3:00 hrs duration
CA (College Assessment): The internal examination for theory and practical course.

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

Semester V

Ent-501 Entrepreneurship Paper VII Business Finance **40 Lectures**

Unit	Content	Lectures
I	**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	**10L**
II	**International financial institutions:** International Monitory Fund (IMF), International Bank for Reconstruction & Development (IBRD/ World Bank), International Finance Corporation (IFC), Multinational Investment Guarantee Agency. **Introduction to Business Finance** : Concept, Nature, Scope, Objective and Importance. **Sources of Business Finance :** Long term equity shares, Preference shares, Debentures, Bonds, Loan form banks, Public deposits, Sources of working capital finance	**10L**
III	**Business finance :** International finance, International finance environment, Global capital structure **Foreign exchange:** Foreign exchange, Foreign exchange market, convertibility of rupees & its implications. **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, Tradingon stock exchange, Online trading.	**7L**
IV	**Financial planning:** Concept of financial plan, Objective of financial planning, types & steps in financialplanning, **Capital budgeting:** Concept of capital budgeting, methods of ranking project – payback period method,internal rate of return, present value method.	**5L**

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

Ent-502 Entrepreneurship Paper-VIII 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

Ent-503 - Industrial Chemistry Paper-VII (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, Hyperchramic and Hypochromic shifts, Effect of conjugatin 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).	**10L**
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.	**10L**
III	**Introduction to 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)	**10L**
IV	**1.3.1 Mass spectroscopy.** **Introduction** 1.3.2 Theory of mass spectroscopy, Mass spectrometer - schematic diagram, formation of ions by ionization, types of ions with at least one example. 1.3.3. Applications of mass spectroscopy. i) Determination of molecular weight. ii) Determination of molecular formula	**10L**

References:

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

Ent-504 - Ind. Microbiology & Ind. Biotechnology
Paper-VII 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** -Intellectual Property Rights (IPR), Patents, Trademarks, Copyrights, Secrets, Patenting of biological materials.	**12L**
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.	**9L**
III	**Recombinant fermentation products** Production of bacterial vaccines: DNA vaccines, Preparation of toxoid from a toxin, Recombinant proteins – Insulin, Interferon. Mushroom cultivation, Vinegar production	**9L**
IV	**Fermentation products & bioprocesses** Bio products and other Processes: Natural Biopreservatives (Bacteriocin / Nisin), and Biopolymers (Pullulan / Xanthan Gum and, PHB). Productionof Solvents- Acetone- butanol, Glycerol	**10L**

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.

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

Ent-601 Entrepreneurship Paper-IX 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	**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

Ent-602 Entrepreneurship Paper-X
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 Behaviour** 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 & Definations, 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	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)

Ent-603 - Industrial Chemistry
Paper-IX (Techniques in Industrial Chemistry) 40 L

Unit	Content	Lectures
I	**Chromatography:** Introduction, General Principle, Classification, Paper Chromatography, Column chromatography, Thin Layer Chromatography, Gas Chromatography, High pressure liquid chromatography.	10L
II	**Electroplating:** Electrolysis, Faraday's law, cathode current efficiency, basic principles of electroplating cleaning of articles, electroplating of nickel and chromium, Anodizing.	10L
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.	10L
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	10L

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)

Ent-604 - Ind. Microbiology & Ind. Biotechnology
Paper-IX (Genetic Engineering & Techniques in plant tissue culture) 40L

Unit	Content	Lectures
I	**Genetic Engineering:** History of Genetic Engineering, Concepts, Ethical issues. **Vehicles:** Cosmids, Plasmids, Bacteriophages phagemids, Shuttle vectore. **Role of Emymes in Gene Cloning:** Nucleases, Polymerases, Ligases, Topoisomerases	**10L**
II	**Techniques used in r DNA Technology:** Agarose, PAGE, Southern, Northern and Western blotting, construction of chimeric DNA, Preparation, Labeling & usage of proper construction and screening of genetics & C DNA libraries. **Gene Amplification:** PCR and its application. Transgenic Plants: Molecular forming, herbicide resistance, insect resistance, virus resistance, flavor savor tomato.	**10L**
III	**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.	**10L**
IV	**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.	**10L**

References:

1. Hall, R.D. (Ed.) 1999. Plant Tissue Culture: Techniques and Experiments, Academic Press, New York.
2. Bhojwani, S.S. and Razdan, M.K. 1996. Plant Tissue Culture: Theory and Practice (a revised edition). Elsevier Science Publishers, New York, USA. Bhojwani, S.S. 1990. Plant Tissue Culture: Applications and Limitations, Elsevier Science Publisher, New York, US
3. An Introduction to Genetic Engineering, 2nd Edition, **Desmond S.T. Nicholl**, Cambridge University Press (2006)**.**
4. Molecular Biotechnology: Principles and Applications of Recombinant DNA, 3rd Edition, **B.R. Glick and J.J. Pasternak**, ASM Press (2007)
5. Principles of Gene Manipulation and Genomics, 7th Edition, **S.B. Primrose and R.M. Twyman**, Blackwell Publishing (2006)
6. Molecular Biotechnology, 2nd Edition, **S.B. Primrose**, Panima Publishing (2001)
7. Introduction to Biotechnology, Low Price Edition, **W.J. Thieman and M.A. Palladino**, Peaeson Education (2007)
8. Genetic Engineering : Principles And Practice, **Sandhya Mitra**, Macmillan India (1996)
9. Genetic Engineering: Principles and Methods, **Setlow J.K**., Kluwer Academic Publishers.

(2000)
10. Genetic Engineering, **Yount L**., Gale Group (2002)
11. Molecular Cloning: A Laboratory Manual (Volume - I, II & III) **Sambrook J., D.W. Russell**, Cold Spring Harbor Laboratory Press (2001)

B.Sc. Entrepreneurship Part – III

Practical Syllabus

Annually Once

EntPr-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.

EntPr-302 Entrepreneurship

Project Work **70+30=100**

Practical Course No. 11. Project Work

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. For this 100 marks are allotted in course **Practical Course No. 11.**Project Work.

EntPr-303Entrepreneurship Industrial Chemistry Lab – Course 70+30=100

Sr. No.	Name of Practical
1	To estimate the amount of sucrose in the given solution by using Fehling's solution.
2	To estimate the amount of nitro group form the given solution of m-nitro aniline (bysnc12 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 paint.
7	To estimate Fe3+ ions by thicoyanate method using colorimeter.
8	To verity Lambert - Beer's law by using copper sulphate solution colorimetrically.
9	To determine the normality of strong acid by titrating it against given string alkali by potentiometric method.
10	To determine the dissociation constant of monobasic acid (acetic acid)
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 ferrous ammonium sulphate.
15	Determination of % purity of a sample containing ferrous ammonium Soleplate using given solution of potassium dichromate.
16	Preparation of tetramine copper (II) Sulphate.
17	Determination of % purity of a simple containing tetramine copper (II) Sulphate by using given solution of sodium thiosulphate.

EntPr-304 Entrepreneurship Industrial Microbiology and Biotechnology 70+30=100

Sr. No.	Name of Practical
1	Introduction to PTC Laboratory
2	Aseptic Manipulation - Washing, Copping, Packing & sterilization, Laminar Operation & General Precautions
3	Stock solutions & media preparation.
4	Aseptic seed germination
5	Callus Culture - initiation
6	Suspension Culture - initiation
7	Micropropagation stage - I Initiation of culture / auxiliary bud culture techique.
8	Micropropagation stage - II Subculture & multiplication.
9	Micropropagation stage - III Rooting - invitro & ex-vitro
10	Micropropagation stage - IV Acclamitazation & hardening.
11	Calculation of molecular weight of digested DNA.
12	Cloning of plasmid / plasmid vector
13	Ligation of DNA
14	Southern blotting technique
15	DNA amplification by PCR
16	Microbial production of dextran by *Leuconostoc mesenteroides*
17	Maintenance and Preservation of microorganisms-short term and long term
18	Culturing and Characterization of microorganisms used in Dairy industry
19	Culturing and Characterization of yeast used in Bakery/distillery/winery
20	Demonstration of Acetic acid oxidation (vinegar production) in laboratory
21	Cultivation of edible mushroom on laboratory scale.
22	Validation of instruments & lab material

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.

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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 11: Project Work.

Distribution of Marks for practical examination: (Practical course 8, Practical course 9, Practical course 10**)**

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 11**):**

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 8 : 100 Marks [UA:70 Marks + CA: 30 Marks]
Practical Course 9 : 100 Marks [UA:70 Marks + CA: 30 Marks]
Practical Course 10: 100 Marks [UA:70 Marks + CA: 30 Marks]
Practical Course 11: 100 Marks [UA:70 Marks + CA: 30 Marks(20 Marks: Internal entire year lab assessment+ 10 Marks- Field visit related to project topic)]

Total Marks: 200 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.