

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



NAAC Accredited-2022
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Entrepreneurship

Name of the Course: B.Sc. III (Sem.– V & VI)

(Syllabus to be implemented from June 2024)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science and Technology
(w.e.f. June 2024)

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. Punyashlok Ahilyadevi Holkar Solapur University, Solapur have taken up an initiative to promote entrepreneurship as a distinct discipline by conducting a degree program namely B.Sc. Entrepreneurship. P.A.H. 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, Punyashlok Ahilyadevi Holkar Solapur University, Solapur 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 Punyashlok Ahilyadevi Holkar Solapur University, Solapur, for B.Sc.-III Entrepreneurship, there are 4 papers and Compulsory English. For B.Sc.-III Entrepreneurship, there are 4 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 20. Each paper has 60 contact hours, which are transformed into 4 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 20 marks and University Evaluation for 80 marks. It is 80+20 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. 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 **50 marks**. Similarly in Semester VI there will be four papers of 100 marks for each with compulsory English **50 marks**.

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 **80** marks for university practical assessment and **20** 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 20 marks and external evaluation (University assessment) of 80 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.

There will be Four theory papers of 80 marks for each semester. Their titles and marks distribution are as under (Excluding English).

B Sc –III Sem-V

DSE-1A - Business Finance

DSE- 2A - Human Resource Management

DSE- 3A - Spectroscopic Methods

DSE 4A(I) - Advances in Fermentation Technology

OR

DSE-4 A(II) - Wine Technology

B Sc- III Sem-VI

DSE- 1B - International Business

DSE- 2B - Organizational Behavior

DSE- 3B - Techniques in Industrial Chemistry

DSE 4B(I) - Genetic Engineering

OR

DSE-4B(II) - Techniques in Tissue Culture

Semester – V

Theory: (100 marks)

University Examination (80/20 marks)

Internal Continuous Assessment: (20 marks)

Scheme of marking: 10 marks – Internal test

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

Semester – VI

Theory: (100 marks)

University Examination (80/40 marks)

Internal Continuous Assessment: (20 marks)

Scheme of marking: 10 marks – Internal test

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

Practical Examination: (100 marks)

University Examination (80 marks): No. of practical course 4 (3 + 1 Project Work)

Internal Continuous Assessment: (20 marks)

Scheme of marking: 10 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 **80 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.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
B. Sc. Entrepreneurship Part - III (Semester V & VI) Syllabus
(CBCS system)
(w.e.f. from June 2024)

Subject / Core Course	Name and Type of the Paper		No. of Papers / Practical	Hrs / Week			Total Marks / Paper	UA	CA	Credits
	Type	Name		L	T	P				
Class:	B.Sc. III Semester V Theory (Entrepreneurship)									
	AECC 4	English (Business English)	Paper II A	4	0	0	50	40	10	2
	DSE 1 A	Business Finance	Paper IX	4	0	0	100	80	20	4
	DSE 2 A	Human Resource Management	Paper X	4	0	0	100	80	20	4
	DSE 3 A	Spectroscopic Methods	Paper XI	4	0	0	100	80	20	4
	Any One from DSE 4A (I) and DSE 4A(II)		Paper XII	4	0	0	100	80	20	4
	DSE 4 A (I)	Advances in Fermentation Technology								
	DSE 4 A (II)	Wine Technology								
			Semester Total	20	0	0	450	360	90	18
Class:	B.Sc. III Semester VI Theory (Entrepreneurship)									
	AECC 5	English (Business English)	Paper II B	4	0	0	50	40	10	2
	DSE 1 B	International Business	Paper XIII	4	0	0	100	80	20	4
	DSE 2 B	Organizational Behavior	Paper XIV	4	0	0	100	80	20	4
	DSE 3 B	Techniques in Industrial Chemistry	Paper XV	4	0	0	100	80	20	4
	Any One from DSE 4A (I) and DSE 4A(II)		Paper XVI	4	0	0	100	80	20	4
	DSE 4 B (I)	Genetic Engineering								
	DSE 4 B (II)	Techniques in Tissue Culture								
			Semester Total	20	0	0	450	360	90	18
Class:	B.Sc. III Annual Practical (Entrepreneurship)									
	DSE 1A & 1B	Practical IV		0	0	5	100	80	20	4
	DSE 2A & 2B	Practical V		0	0	5	100	80	20	4
	DSE 3A & 3B	Practical VI		0	0	5	100	80	20	4
	DSE 4A (I/II) & 4B (I/II)	Practical VII		0	0	5	100	80	20	4
			Practical Total	0	0	20	400	320	80	16
			Grand Total	40	0	20	1300	1040	260	56
		\$ SEC- 2		4			100	80	20	4

Note: (Add-on-self learning)- MOOC/SWAYAM COURSE/INTERNSHIP/INDUSTRIAL TRAINING/Courses offered* by College. (4 Credits) Add on College course list should be submitted to the university for information.

For syllabus see the last pages

General Structure

Theory Examination:

Structure of B.Sc. course under faculty of science has total 06 semesters for 3years.

B.Sc.-III comprises of total two semesters (Sem-V and Sem-VI).

Each semester will have Five theory papers:

One compulsory English paper (40M UA + 10M CA) and four Entrepreneurship papers (80M UA + 20M CA).

The duration of each University theory paper examination will be of 2 hr. and 30 min.

Each theory paper has 20 marks for internal examination. There will be 10 marks unit test and 10 marks home assignment

At the end of academic year i.e. Semester -VI the practical examination will be conducted.

The weightage of practical is of 320 marks for university external practical examination and 80 i.e (20*4) marks for internal practical examination.

Abbreviations:

L: Lectures

T: Tutorials

P: Practical

UA: University Assessment

CA: College Assessment

CC: Core Course

AEC: Ability Enhancement Course

DSE: Discipline Specific Elective Paper

SEC: Skill Enhancement Course

GE: Generic Elective

Semester - V

Program Name: B.Sc. - III Entrepreneurship

Paper Name: DSE 1 A: Title: Business Finance Paper IX

Course Credit	No. of Hours per week	Total No. of Teaching Hours	Total Marks.
04	04	60	80+20=100

Learning Objectives:

1. Understand basic concepts, objectives, importance of business finance.
2. Understand the functions and the role of the financial decision-maker.
3. Interpret sources of finance required for smooth functioning of business.
4. Understand the functioning of Stock market.
5. Understand the international sources of finance such ADRs, and GDR, s.

Course Outcome:

After completion of the course, students will able to

1. Understand the mechanism of stock exchanges.
2. Understand international equity market.
3. Interpret lease financing and venture capital.
4. Work as Finance manager in multinational companies.

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. Financial planning: Concept of financial plan, Objective of financial planning, types & steps in financial planning.	15L
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. Lease 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	15L

	India	
III	<p>Marketing of Securities: Issue of securities, Public issue, Steps in public issue, Right issue and private placement.</p> <p>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)</p>	15L
IV	<p>International Finance: International finance, International finance environment, Global capital structure Types of instruments – International equity markets: Market structure, trading in international equities, cross listing of equities, GDRs, ADRs, IDRs, Global registered shares</p>	15L

Books for Reference:

1. Essentials of Business Finance – Dr. R. M. Shrivastava.
2. Business Finance – Dr. P. V. Kulkarni.
3. Investment and Securities Market in India – V. A. Adhani.
4. Investment Management - V. K. Bhalla.
5. Financial Services in India – M. A. Kothak. 6. Stock Exchange trading in India – Gupta C. L.
7. Corporation Finance, Principles and Problems – S. C. Kuchal.
8. Corporate Finance – Brealey, Richard and Steward C Myers.
9. Elements of Finance – B. L. Mathur. 10. Investments – Bodie, Alex Kane, Alen J. Marcus, Pitabas Mohanty.

DSE 2 A: Human Resource Management Paper X

Unit	Content	Lectures
I	<p>Nature and Scope of Human Resource Management: - Meaning, Definitions, Objectives, Functions and Importance of Human Resource Management Role of Human Resource Management</p> <p>Recruitment: - Definition, Objectives, External & Internal sources of recruitment, Job Analysis, Job description, Job Specification.</p>	15L
II	<p>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.</p> <p>Training & Development: - Meaning of training, importance of training, Need & Objectives of training, advantage of training, Training Method, Meaning of development, Principles of development.</p>	15L
III	<p>Internal & External mobility: Internal mobility: - need & purpose. Promotion: meaning, types, purpose, Transfer: Meaning, types, reasons, benefits, problems. Demotions: reasons & principles. External Mobility: - meaning & types</p> <p>Career Planning & Developments Meaning succession planning. Elements of career development programme, Steps in career development system, advantage & limitations</p>	15L
IV	<p>Employee Benefits: - Provident Fund, Gratuity, E.S.I. Maintenance Allowance, Convenience Allowance, Employee Health and Safety, Accident prevention.</p> <p>Performance appraisal: - Meaning, purpose, Need of performance appraisal, methods of P. A., Use of P. A., and Problems of P.A. Who will appraise?</p>	15L

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: Spectroscopic Methods Paper XI

Unit	Content	Lectures
I	<p>Ultra -Violet absorption: Spectroscopy: Introduction, Beer - Lambert Law, Types of electronic transitions, Terms, used in UV spectroscopy: Chromospheres, Auxochrome, Batho chromic, Hypsochromic, Hyper chromic and Hypo chromic shifts, Effect of conjugation on position of UV bands, Calculation of max by Woodward - Fieser rules of conjugated dienes and enones. Applications of UV spectroscopy: Determination of structure and stereochemistry (cis and trans).</p>	15L
II	<p>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 IR spectroscopy: Determination of structure, Identification of functional groups simple spectral problems based on IR.</p>	15L
III	<p>NMR Spectroscopy: Introduction, proton magnetic resonance (¹H NMR) 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 deshielding, chemical shift, measurement of chemical shift by delta scale and tau scale, TMS as reference, Advantages of TMS, peak area (Integration) spin-spin splitting (n+1 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 IR & UV data to be given)</p>	15L
IV	<p>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.</p>	15L

References:

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

DSE 4 A (I): Advances in Fermentation Technology Paper XII

Unit	Content	Lectures
I	<p>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, Test for sterility, pyrogenicity, allergy, carcinogenicity, toxicity for Pharmaceutical and health care and food products.</p> <p>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.</p>	15L
II	<p>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.</p>	15L
III	<p>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.</p>	15L
IV	<p>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.</p>	15L

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.

DSE 4A (II): Wine Technology

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, Alcoholic beverage and health: Effects on the human health, Status of Indian brewing, winemaking and alcohol.	15L
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, Automation in wine industry: Importance of automation operation in wine industries, New concept in wine production – organic wine and biodynamic wine.	15L
III	Post-fermentation Treatments and Related Topics: Wine Adjustments- Acidity and pH Adjustment, Sweetening, Dealcoholization, Flavor Enhancement, <i>Sur lies</i> Maturation, Color Adjustment, Blending, Stabilization, Fining, Clarification, Aging, Effects of Aging, Factors Affecting Aging, Anatomical and chemical constituents of oak and liberation of oak flavors from the barrel in beer and alcohol, 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.	15L
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.	15L

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. GlaudioDelfins& 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 Dubourdiou et.al (2000). John Wiley and Sons, Ltd., New York.

B.Sc. III (Semester VI)

Theory

Paper Name: DSE 1 B: Title: International Business Paper XIII

Course Credit	No. of Hours per week	Total No. of Teaching Hours	Total Marks.
04	04	60	80+20=100

Learning Objectives

1. To understand the basic concepts and nature of international business.
2. To understand foreign trade procedure and documentation.
2. To know the modes of international business.
3. To identify future opportunities and challenges of India's international Trade.

Learning Outcomes:

After successfully completion of the course students will....

1. To identify future opportunities and challenges of India's international Trade.
2. Students gain the knowledge of foreign trade procedure with documentation.

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/Import procedure, documentation, Financing technique, Export promotion.	15L
II	International Economic Environment: - International Trade Policy and Relations, Tariffs, Subsidies, Import Quota, Voluntary Export restraints. Administrative policies and International law and Business firms. Multinational Corporation Definition, concept, factors that contributed for the Growth of MNCs, Advantages & Disadvantages of MNCs, Role of MNC's Economic Development	15L
III	Modes of entering in International Business: Modes of entry, Exporting, Licensing, Franchising, Contracts, Turnkey	15L

	<p>Projects, Mergers, Acquisitions and Joint Venture.</p> <p>World Trade Organization: History, objectives, Functions, Ministerial Conferences of WTO.</p>	
IV	<p>International Financial Institutions - IMF, World Bank and ADB – functions and role in economic development.</p> <p>Trade Blocks Economic Integrations: Free Trade Area, Custom unions common markets, Economic Unions, GATT, EEC, ASEAN, SAARC, SAFTA.</p> <p>SAP Support Services: The financial accounting and controlling (FI/CO) modules, the sales and distribution (SD) module, the materials management (MM) modules, the plant maintenance (PM) and the production planning (PP) module, the human resources (HR) module.</p>	15L

Books for Reference:

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. Francies Cherunilam, “International Business – Text and Cases”, PHI Pvt. Ltd, New Delhi.
6. V. K. Bhalla, S. Shiva Ramu, International Business, Environment and Management, Anmol Publications Pvt Ltd, New Delhi.
7. V Sharan, , International Business,, Pearson Education, New Delhi.

DSE 2 B: Organizational Behavior Paper XIV

Unit	Content	Lectures
I	<p>Introduction to Organization Behavior: Definition, Historical, Evolution of O.B., Nature & Scope, Learning Organization, Types of Learning Organization.</p> <p>Individual & Organization Behavior: Individual Differences & their uses in industries, Individual process, thinking memory, leaving, emotion, intelligence and ability.</p> <p>Group Dynamics: Nature of groups, Type of group, why do people join group, Group development, usefulness of group in organization, Determinants of group behavior, Group Structure, Individual and Inter Personal behavior, job satisfaction, time management.</p>	15L
II	<p>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</p> <p>Personality: Nature of Personality, Types of personality, Theories of personality-trait theory, social learning theory, Maslos theory, personality & O. B.</p> <p>Perceptions: Perceptions- Meaning & Definitions, Factors influencing perceptions, perceptual process, perception & O.B.</p>	15L
III	<p>Motivation: Nature of motivation, Importance of motivation, Theories of Motivation- Maslows theory, Hereberg theory, Expectancy theory, Goal setting theory</p> <p>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.</p>	15L
IV	<p>Electronic commerce environment and opportunities: Background, the electronic commerce environment, electronic market Place technologies, conclusion.</p> <p>Modes of Electronic commerce: Overview, Electronic data interchange, Migration of open EDI, Electronic commerce with WWW / internet, Commerce Net Advocacy, Web commerce going forward.</p> <p>Electronic cash and Electronic payment: Internet monetary payment and security requirements, payment and purchase order process, online electronic cash.</p>	15L

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: Techniques in Industrial Chemistry Paper XV

Unit	Content	Lectures
I	Chromatography: Introduction, General Principle, Classification, Paper Chromatography, Column chromatography, Thin Layer Chromatography, Gas Chromatography, High pressure liquid chromatography.	15L
II	Distillation: Fraction distillation, steam distillation, vacuum distillation, Batch distillation distillation, continuous distillation, fractionating column, spinning cone	15L
III	Green Chemistry: Introduction, twelve principles of green chemistry zeolites - Friedel craft's alkylation and acylation, oxidation of benzene to phenol and benzoquinone, Reduction of benzoquinone to hydroquinone, Biocatalytic reactions, hydroxylation and oxidation using enzymes microwave assisted reactions.	15L
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, CO ₂ , and Halon-1301.	15L

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. Distillation: Fundamental and Principles– Andrez Gorak and Hartmut Schoenmakers
7. Distillation: Operation and Applications – Andrez Gorak and Hartmut Schoenmakers
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)

DSE 4 B (I): Genetic Engineering Paper XVI

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: <i>E. coli</i> lac and T7 promoter-based vectors, yeast Yip vectors, Baculovirus based vectors, mammalian SV40-based expression vectors.	15L
II	Gene Transformation and Transfection: Transformation of DNA: Chemical method, Electroporation, Gene delivery: Microinjection, electroporation, biolistic method (gene gun), liposome and viral mediated delivery, <i>Agrobacterium</i> - 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.	15L
III	Amplification, sequencing, construction and screening of cDNA: Probes: Genomic DNA probes, cDNA probes, synthetic oligonucleotide probes, RNA probes, methods of labeling probes. 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: Molecular markers: DNA Fingerprinting, RFLP, RAPD, AFLP, basic PCR and types.	15L
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, Modification of food plants taste (Sweetness), plant as bioreactor for polymers, plant as edible vaccines, Microbial synthesis of Rubber.	15L

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.

DSE 4B (II): Techniques in Tissue Culture

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.	15L
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.	15L
III	Plant tissue Culture Techniques: Concepts of Cell theory & Cellular totipotency, Landmarks in plant tissue culture. Organization of plant tissue culture laboratory – General laboratory & Inoculation room, Culture room, different work areas, equipment & instruments required. Media preparation & Aseptic techniques – Nutritional requirements of explant, Preparation of media & its sterilization, Washing, packing & sterilization of glassware, surface sterilization, Aseptic work station, precautions to maintain aseptic conditions. Culture Medium: Nutritional requirements of the explants, PGRs and their applications. 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, Protoplast culture: Introduction, Principle, Protocol and methods of protoplast fusion, applications.	15L
IV	Plant Organ Culture: Introduction, Principle, Protocol, Factors affecting applications & limitations with reference to root tip culture, Leaf Culture, Shoot tip. Concept of Haploid production & its applications, Concept of embryo and endosperm culture & its applications, Anther and Pollen Culture: Introduction, Protocol, Factor affecting, Applications & limitations. Ovule Culture: Introduction, Protocol, Factor affecting, Applications & limitations. Micro Propagation: Introduction, Stages of Micro propagation, Factors affecting, Applications & limitations, Somaclonal variations.	15L

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. Plant tissue culture-Kalyankumar Dey
5. Biotechnology- B.D. Singh
6. A text book of Biotechnology- R.C. Dubey
7. Biotechnology- H.S. Chawla
8. Animal biotechnology-M.M.Ranga
9. Animal biotechnology-R.Sasidhara
10. Animal cell culture technique-Ed. Martin Clynes Springer
11. Cell growth & division a practical approach-Ed. R. B. Segal&R.L.Press
12. Introduction to plant tissue culture- M.K. Razda

**B.Sc. III Annual
Practical**

DSE 1A & 1B: Practical IV

Sr. No.	Name of Practical
1	To study problems of International Business by visiting a global export unit.
2	To study any two Mergers and Strategic alliance.
3	To study any two franchising and Turnkey Projects.
4	To study recent Policies of GATT, ASEAN, SAARC, SAFTA.
5	To study Role of any two multinational corporations in development of India.
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. Managers.
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. 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.

Note: Minimum total 12 practicals should be conducted

DSE 2A & 2B: Practical V

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. The Project Work carries 100 marks.

DSE 3A & 3B: Practical VI

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 and ester.
4	To estimate the amount of acid and amide from the given mixture of acid and amide.
5	Preparation of benzene azo β-naphthol from β-napthaol.
6	Preparation of Benzoic acid from Benzamide.
7	To estimate Fe ₃₊ ions by thicyanate method using colorimeter.
8	To estimate Fe ₃₊ ions by Salicylate method.
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.
Note:	Minimum total 12 practical's should be conducted

DSE 4A & 4B: Practical VII

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
	Identification of off odors in wine.
6	Isolation of yeast/bacterial/plant 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
Note:	Minimum total 12 practicals should be conducted

A) 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 DSEA & 4B: Practical VII

Distribution of Marks for practical examination: for

(DSE 1A & 1B: Practical IV, DSE 3A & 3B: Practical VI and DSE 4A & 4B: Practical VII)

- 1) Two major experiments: 40 marks (i.e. 20 marks each)
- 2) Two minor experiments: 20 marks (i.e. 10 marks each)
- 3) Viva voce: 10 marks
- 4) Journal: 10 marks

Total marks 80 marks

Distribution of Marks for Project Work DSE 2A & 2B: Practical V

The report shall be examined by the External examiners (appointed by the University) who will assign marks out of 80 for project work as follows:

- 1) Selection of the project topic - 15 marks
- 2) Project methodology - 15 marks
- 3) Project Writing - 15 marks
- 4) Oral presentation and Viva - 15 marks
- 5) Tour report: 20 marks

Total marks 80 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- y e a r degree course only on passing in all the heads of passing of B.Sc. Part I, II and II
