

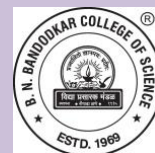
Academic Council/Meeting No. and Date: 09/ July 02 2024

Agenda Number: 03

Resolution Number: 3.10/3.30



**Vidya Prasarak Mandal's
B. N. Bandodkar College of
Science (Autonomous), Thane**



Syllabus for

Programme : Bachelor of Science

Specific Programme :

S.Y.B.Sc. Human Science

Revised under NEP and Autonomy

From academic year 2024 - 2025

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Preamble

Eligibility: Level 4.0

Duration: 1 Year (includes SEM III and SEM IV)

Mode of Conduct: Offline

Laboratory Practicals / Offline lectures / Online lectures

Total Credits for the Program: 176 Starting year of implementation: 2024- 25

Name of the Degree Program: B.Sc

Discipline/Subject:

**Specific Programme : S.Y.B.Sc. (Subject (Major)
Credits: 06**

Program Specific Outcome: By the end of the program the students will be able to:

Assessment: Weightage for assessments (in percentage)

Type of Course	Formative Assessment / IA	Summative Assessment
Theory		
Practical		
Project		
Experimental learning		
Internship		

VPM's B.N. Bandodkar College of Science (Autonomous), Thane

S.Y.B.Sc.

Curriculum Structure for the Undergraduate Degree Program S.Y.B.Sc Human Science

NEP IMPLEMENTATION ON 2024

Semester III

Structure of Programme

Semester III

	Course Code	Course Title	No. of lectures	Credits
Major	24BUHS3T01	Haematology, immunology & epidemiology	30	2
	24BUHS3T02	Nutrition & Lifestyle	30	2
	24BUHS3T03	Health & wellness	30	2
	24BUHS3P01	Practicals based on 24BUHS3T01	60	2
	24BUHS3P02	Practicals based on 24BUHS3T02 and 24BUHS3T03	60	2
Minor	24BUHS3T04	Personality & cognitive psychology	30	2
GE &OE	24BUHS3T05	Management and Organization – Structure, Functioning(GE/OE)	30	2
VSC	24BU3VSC06	Intelligence & behavior	45	2
AEC	24BU3AEC06	Introduction to Cyber Law and Shaping leaders	30	2
FP	24BUHS3P03	Field project	60	2
CC	23BU3CC601 23BU3CC602 23BU3CC603 23BU3CC604 23BU3CC605 23BU3CC607	Community Engagement Activities Social science(NSS)/Defence Science(NCC)/Distance Lifelong Learning Education(DLLE)/Physical education (Sports)/Cultural/Yoga for health	60	2
Total				22

Semester IV

	Course Code	Course Title	No. of lectures	Credits
Major	24BUHS4T01	Sex & Fertility	30	2
	24BUHS4T02	Basics of Biotechnology	30	2
	24BUHS4T03	Environmental studies	30	2
	24BUHS4P01	Practicals Based on 24BUHS4T02	60	2
	24BUHS4P02	Practicals Based on 24BUHS4T03	60	2
Minor	24BUHS4T04	Introduction to social psychology & LGBTQ Community	30	2
GE & OE	24BUHS4T05	Introduction to economics	30	2
VSC, SEC, VSEC	24BU3VSC04	Social Perception	45	2
AEC	24BU3AEC07	Introduction to Archaeology & Economics	30	2
FP	24BUHS4P03	Field project	60	2
CC	23BU4CC601 23BU4CC602	Community Engagement Activities	60	2

	23BU4CC603 23BU4CC604 23BU4CC605 23BU4CC607	Social science(NSS)/Defence Science(NCC)/Distance Lifelong Learning Education(DLLE)/Physical education (Sports)/Cultural/Yoga for health		
		Total		22

Semester III

MAJOR			
Course Code	Course Title LIFE SCIENCE in Human Science	No. of lectures	Credits
24BUHS3T01	Haematology, immunology & epidemiology	30	2
Unit 1	Hematology & Immunology	15	
Unit 2	Epidemiology	15	
24BUHS3T02	Nutrition & Lifestyle	30	2
Unit 1	Health & Nutrition	15	
Unit 2	Health & Life style	15	
24BUHS3T03	Health & wellness	30	2
Unit 1	Population & Health	15	
Unit 2	Public Health	15	
Total		90	6

MINOR- Humanities in Human Science			
Course Code	Course Title	No. of lectures	Credits
24BUHS3T04	Personality & cognitive psychology	30	2
Unit 1	Theories of Personality	15	
Unit 2	Thinking and reasoning	15	
Total		30	2

GENERIC ELECTIVE (GE)			
Course Code	Course Title	No. of lectures	Credits
24BUHS3T05	Management and Organization – Structure, Functioning	30	2
Unit 1	Management approaches and skills	15	
Unit 2	Organizations and social responsibility	15	
Total		30	2

ABILITY ENHANCEMENT COURSE (AEC)			
Course Code	Course Title	No. of lectures	Credits
24BU3AEC06 (AEC)	Introduction to Cyber Law and Shaping leaders	30	2
Unit 1	Shaping the leaders	15	
Unit 2	Cyber Laws, Investigation and Ethics	15	
Total		30	2

VOCATIONAL & SKILL ENHANCEMENT COURSES (VSEC)			
Course Code	Course Title	No. of lectures	Credits
24BU3VSC06 (VSEC)	Intelligence & behavior	15	1
Unit 1	Intelligence, IQ measurement & behaviour	15	1
Total		15	

Semester IV

MAJOR			
Course Code	Course Title LIFE SCIENCE in Human Science	No. of lectures	Credits
24BUHS4T01	Sex & Fertility	30	2
Unit 1	Reproductive systems	15	
Unit 2	Sex Hormone related disorders & diseases	15	
24BUHS4T02	Basics of Biotechnology	30	2
Unit 1	Genetically modified products.	15	
Unit 2	Application of biotechnology	15	
24BUHS4T03	Environmental studies	30	2
Unit 1	Environmental Science & laws	15	
Unit 2	Environmental Pollution	15	
Total		90	6

MINOR			
Course Code	Humanities in Human science	No. of lectures	Credits
24BUHS4T04	Introduction to social psychology & LGBTQ Community	30	2
Unit 1	Social psychology-I	15	
Unit 2	LGBTQ Spectrum	15	
Total		30	2

GENERIC ELECTIVE (GE)			
Course Code	Course Title	No. of lectures	Credits
24BUHS4T05	Introduction to economics	30	2
Unit 1	Basic economics	15	
Unit 2	Classification of markets	15	
Total		30	2

INDIAN KNOWLEDGE SYSTEM (IKS)			
Course Code	Course Title	No. of lectures	Credits
24BU4AEC07 (IKS)	Introduction to Archeology & Economics	30	2
Unit 1	Temple archeology and water management system in ancient India	15	
Unit 2	History & advances in economics	15	
Total		30	2

VOCATIONAL & SKILL ENHANCEMENT COURSES (VSEC)			
Course Code	Course Title	No. of lectures	Credits
24BU4VSC04 (VSC)	Social Perception	15	1
Unit 1	Social Perception & behavior	15	
Total		15	1

Course Code	Course Title and Contents	Lectures	Credit Points
24BUHS3T01	Haematology, Immunology and Epidemiology	30	2
Course objective: <ul style="list-style-type: none">It will help Students to learn fundamentals of haematology, immune system, broad public health problems.			
Unit I	Introduction to haematology & immunology	15	
	<ul style="list-style-type: none">Composition of Blood, RBC, WBC& Platelets,Blood groups and Blood banksIntroduction to ImmunologyImmunoglobinsAutoimmune Diseases –Definition and Reasons-Inflammatory bowel disease, Myasthenia gravis, Psoriasis, Rheumatoid arthritis, Celiac Disease.		
Unit II	Introduction to Epidemiology	15	
	<ul style="list-style-type: none">Introduction to Epidemiology – Definition, Air borne, vector borne, water borne diseasesCommunicable diseases: Diagnosis, transmission, prevention, control measures of-Tuberculosis, polio myelitis, dengue, covid 19, leptospirosis, Ebola, Ascariasis, filariasis.		
TEXT BOOK: 1. Human Physiology CC Chaterjee Central Book Agency 12th edition vol I and Vol-II 2018 2. Anatomy and Physiology Seeley Stephen Tale McGraw hill 2nd edition 2011 3. Principles of anatomy & physiology Bryan H. Derrickson & Gerard J. Tortora Wiley India Pvt. Ltd 15th edition 2016 4. Essentials in hematology and clinical pathology K. Ramnarayan Jaypee Brothers medical 2nd edition 2017 5. A textbook of Immunology P. Madhavee latha S. Chand - 2016 6. Essentials of Immunology S.K.Gupta Arya Publications 2nd edition 2017 7. Park’s Textbook of Preventive & Social Medicine K. Park Banarasidas Bhanot Publishers 7th edition 2005			
Course outcome: After studying this paper students should able to : i. Read blood profile & able to understand various blood tests ii. Identify various underlying sources, causes & method of control of disease			

Course Code	Course Title and Contents	Lectures	Credit Points																														
24BUHS3T02	Nutrition & Lifestyle	30	2																														
Course objective: It will help students to understand about basic nutrition & stress management.																																	
Unit I	Health and Nutrition:	15																															
	<ul style="list-style-type: none">• Basic food groups• Balanced diet and recommended dietary allowances• Under-nutrition and deficiency: Anemia, Vitamin A , vitamin B,Vitamin D, Iodine and other deficiency disorders• Mal-nutrition during pregnancy and lactation, infant.• Diet related chronic diseases namely overweight and obesity, cardiovascular disease, diabetes, osteoporosis, cancer																																
Unit II	Health and Lifestyle:	15																															
	<ul style="list-style-type: none">• Importance of nutrition on health and fitness• Influence of different cultural cuisine on nutrition and lifestyle• Modern lifestyle changes with regards to foods and nutrition for example microwave cooking, ready to make/eat preparations, packaged and fast foods and other modern methods of cooking; its impact on health, untimely meals, pleasure eating• Stress management: Conditions of stress, types of stress, effects and symptoms, stress management techniques• Ill effects of using mobile phone and watching television while eating.• Epicurean,• Bulimia.																																
<p style="text-align: center;">TEXT BOOK:</p> <table><tr><td>1.</td><td>Nutrition Science</td><td>B. Srilakshmi</td><td>New age international</td><td></td><td></td></tr><tr><td>6th</td><td>2017</td><td></td><td></td><td></td><td></td></tr><tr><td>2.</td><td>Food Science</td><td>B. Srilakshmi</td><td>New age international</td><td>2nd</td><td>2007</td></tr><tr><td>3.</td><td>Dietetics</td><td>B. Srilakshmi</td><td>New age</td><td></td><td></td></tr><tr><td>International</td><td>3rd</td><td>2013</td><td></td><td></td><td></td></tr></table>				1.	Nutrition Science	B. Srilakshmi	New age international			6th	2017					2.	Food Science	B. Srilakshmi	New age international	2nd	2007	3.	Dietetics	B. Srilakshmi	New age			International	3rd	2013			
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3.	Dietetics	B. Srilakshmi	New age																														
International	3rd	2013																															
<p>Course outcome:</p> <ul style="list-style-type: none">• To realize the relationship between nutrition, lifestyle and environment on health and fitness.• To understand the basic concept of balanced diet• To gain the knowledge of various food groups along with their deficiency disorder																																	

Course Code	Course Title and Contents	Lectures	Credit Points																		
24BUHS3T03	Health & wellness	30	2																		
Course objective: It will help students to understand impact of pollution on health																					
Unit I	Health	15																			
	<ul style="list-style-type: none">• Infections: Bacterial and fungal infections of Skin, Respiratory track, Intestinal track, Ear, Eye.• Allergic reactions on skin, Respiratory track, Intestinal track.• Abdominal and Intestinal diseases• Dental Disorders – dental carries and dental pain• Skeletal Muscular Systems – back pain, spondylosis• Central Nervous System – impairment of neurological development, peripheral nerve damage and headaches• Common diseases – malaria, chicken pox, septic wounds, congenital abnormalities,• Cardiovascular diseases.• Cancer types, cause, treatment.																				
Unit II	Public Health Hazzard and Health Care	15																			
	<ul style="list-style-type: none">• Public health studies (Functions,Interventions,Future)• Contemporary Health issues.• Communicable and non-communicable diseases• Occupational health and hazards• Global and local health issues• Maternal , child health care• Family planning and birth control methods.																				
<p style="text-align: center;">TEXT BOOK:</p> <table><tr><td>1.</td><td>Psychology</td><td>Saundra Ciccarelli, Glenn Mayer</td><td>Pearson</td><td>5th</td><td>2006</td></tr><tr><td>2.</td><td>Psychology</td><td>David G. Mayer</td><td>Macmillan (customised for Mumbai university)</td><td>10th edition</td><td>2013</td></tr><tr><td>3.</td><td>Theories of Personality</td><td>Fiest, Fiest, Roberts</td><td>McGraw Hill</td><td>9th edition (Indian)</td><td>2018</td></tr></table>				1.	Psychology	Saundra Ciccarelli, Glenn Mayer	Pearson	5th	2006	2.	Psychology	David G. Mayer	Macmillan (customised for Mumbai university)	10th edition	2013	3.	Theories of Personality	Fiest, Fiest, Roberts	McGraw Hill	9th edition (Indian)	2018
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3.	Theories of Personality	Fiest, Fiest, Roberts	McGraw Hill	9th edition (Indian)	2018																
<p>Course outcome:</p> <ul style="list-style-type: none">• To realize the relationship pollution & public health.• To understand common health hazards.																					

Course Code 24BUHS3P01	Course Title (Major) Practicals based on 24BUHS3T01	Credits 2	No. of lectures in hrs.
Practical 1	Blood group testing		4
Practical 2	Determination of haemin Crystal		4
Practical 3	To study various blood reports & interpretation		4
Practical 4	Enumeration of RBC (Total count)		4
Practical 5	Enumeration of WBC (Total count)		4
Practical 6	To study the effect of different NaCl concentration on structure of RBC		4
Practical 7	Haemoglobinometer – Operation & its uses		4
Practical 8	Study of Parasites – Plasmodium, Enterobius, Ascaris, Wucheria, Tapeworm		4
Practical 9	Study of Virus – Polio / H1N1 / AIDS / COVID19		4
Practical 10	Erythrocyte sedimentation rate		4
Practical 11	Differential count of leukocytes		4
Practical 12	Identification- ELISA		4
Practical 13	Identification- Leukemia cell slide		4
Practical 14	Identification of different formed elements		4
Practical 15	Bleeding time- Clotting time test		4

Course Code 24BUHS3P2	Course Title (Major) Practicals based on 24BUHS3T02 and 24BUHS3T03	Credits 2	No. of lectures in hrs.
Practical 1	Pregnancy Test using test kit		4
Practical 2	Recipe for healthy breakfast		4
Practical 3	Preparation of balanced diet chart		4
Practical 4	Study of Body Mass Index formula relating to weight & height		4
Practical 5	Determination of nutrition status by BMI		4
Practical 6	Protein estimation by Folin-Lowry method in Pulses		4
Practical 7	Study of nutritional deficiency diseases		4
Practical 8	Study of microbial staining		4
Practical 9	Identification of food grains, Lentils & fibrous foods		4
Practical 10	Study of nutritional value of Tin and canned food (Research project)		6
Practical 11	Study of skin diseases (Research Project)		6
Practical 12	Estimation of Cholesterol Content from different food samples (Research Project)		6
Practical 13	To study the dentition in mammals -Dental formula & compare with human dentition		6

Course Code	Course Title and Contents	Lectures	Credit Points																		
24BUHS3T04	Personality & cognitive psychology	30	2																		
Course objective: <ul style="list-style-type: none">To elaborate on aspects of cognition, theories of personalityTo give students exposure to the research work in the field																					
Unit I	Theories of Personality	15																			
	<ul style="list-style-type: none">An overview of Theories of PersonalitySigmund Freud and PsychoanalysisThe Behaviourist view of PersonalityThe Social Cognitive view of PersonalityHumanism and PersonalityTrait TheoriesThe biology of Personality: Behavioural GeneticsAssessment of PersonalityApplying Psychology – Personality testing on the internet																				
Unit II	Thinking and Reasoning	15																			
	<ul style="list-style-type: none">Definition and nature of thinkingKinds of thinkingProblem solvingConcept formation and categorization: prototypes, hierarchies of concepts.Reasoning: deductive, inductive reasoningCreative thinking																				
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3.	Theories of Personality	Fiest, Fiest, Roberts	McGraw Hill	9th edition (Indian)	2018																
<ul style="list-style-type: none">Course outcome:To Understand and apply the theories of personalityTo get acquainted with researches in the fieldUnderstand the mental processes involved in thinking and reasoning																					

Course Code	Course Title and Contents	Lectures	Credit Points
24BUHS3T05 GE	Management and Organization – Structure, Functioning	30	2
Course objective: It will help students to understand about management skills & organizations			
Unit I	Management approaches & skills	15	
	<ul style="list-style-type: none">Nature Scope and process of management, historical evolution of management & its foundation.Types of ManagementDifferent approaches and systems of management,Types of skills, roles and modern challenges.Management Planning Process, Managerial decision MakingIntroduction to Organizing, Organizational Structure and Its Dimensions.Different Types of Organizational Design and Their Advantages and Disadvantages.		
Unit II	Organizations & social responsibility	15	
	<ul style="list-style-type: none">Relationship between organization objectives and organization hierarchyAuxiliary Staff and line staff.OCB-Organizational, Citizenship Behaviour.Corporate social responsibility & Institutional Social Responsibility.Go green concept in various industries/organisation		
<p style="text-align: center;">TEXT BOOK:</p> <div><div>1.</div><div>Management – A competency building approach</div><div>HeilReigel / Jackson/ Slocum</div><div>South Western</div><div>11</div><div>2007</div></div> <div><div>2.</div><div>Organizational Behaviour –</div><div>Stephen Robbins</div><div>Pearson</div><div>18</div><div>2018</div></div> <div><div>3.</div><div>Management Text & Cases</div><div>V.S.P. Rao & V. Hari Krishna</div><div>Excel Books</div><div>2</div><div>2022</div></div> <div><div>4.</div><div>Understanding Organizational Behavior</div><div>Udai Pareek</div><div>Oxford University Press -</div><div>2004</div></div>			
<ul style="list-style-type: none">Course outcome:The learner will understand the techniques of management organization leadership & will develop leadership managerial skills with social responsibilities & organizational behaviour.			

Course Code 24BU3VSC06 (VSC)	Course Title Intelligence & Behavior.		Credits 1	No. of lectures 15
Course objective: To elaborate on aspects of intelligence				
Unit I: Intelligence, IQ measurement & behavior	<ul style="list-style-type: none">Individual differences and Intelligence theoriesIndividual differences, major areas of differences, heredity v/s environment,Intelligence -what is it? Measurement of Intelligence and Intelligence ScalesWhat is IQ, IQ and behaviour?	Pedagogy: By conducting different types of IQ test along with behavioral test and case based studies	Internal assessment (15+10=25) & practical (25)	15
<ul style="list-style-type: none">Course outcome:To study and apply theories of intelligence and factors affecting the same.				

Course Code	Course Title and Contents	Lectures	Credit Points										
24BU3AEC06	Introduction to Cyber Law and Shaping leaders	30	2										
Course objective: To make the students aware about the cyber laws and related issues and to develop leadership qualities.													
Unit I	Shaping the leaders	15											
	<ul style="list-style-type: none">Leadership: Elements of leadership in work groupThe quality of modern leadershipLeadership theories and leadership stylesThe role of power and the role of expectationsLeadership functionsCharacteristics of successful leadersPressures and problems of leadersDifference between manager and leader												
Unit II	Cyber crime and cyber law	15											
	<ul style="list-style-type: none">Classification of cyber crimes, Common cyber crimes- cyber crime targeting computers and mobiles.cyber crime against women and children, financial frauds, social engineering attacks, malware and ransomware attacks, zero day and zero click attacks, Cybercriminals modus-operandi.Reporting of cyber crimes, Remedial and mitigation measures, Legal perspective of cyber crime.IT Act 2000 and its amendments, Cyber crime and offences, Organisations dealing with Cyber crime and Cyber security in India, Case studies.												
<p style="text-align: center;">TEXT BOOK :</p> <table><tr><td>Cyber Crime Impact in the New Millennium,</td><td>R. C Mishra</td><td>Auther Press.</td><td>-</td><td>2010</td></tr><tr><td>Cyber Laws: Intellectual Property & E-Commerce Security</td><td></td><td>Kumar K</td><td>Dominant Press</td><td>- 2011</td></tr></table>				Cyber Crime Impact in the New Millennium,	R. C Mishra	Auther Press.	-	2010	Cyber Laws: Intellectual Property & E-Commerce Security		Kumar K	Dominant Press	- 2011
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Cyber Laws: Intellectual Property & E-Commerce Security		Kumar K	Dominant Press	- 2011									
<ul style="list-style-type: none">Course outcome:Students, at the end of this module, should be able to understand the cyber-crimes, their nature, legal remedies and as to how report the crimes through available platforms and procedures.The learner will understand policies for wellbeing of society													

Course Code 24BU3VSC06	Course Title (VSEC) Practicals based on 24BU3VSC06	Credits 1	No. of lectures in hrs.
Practical 1	Big 5 inventory (Personality test)		3
Practical 2	Nine dot problem		3
Practical 3	Self-esteem scale		3
Practical 4	Case study and identify the psychological theories.		3
Practical 5	Method of Loci		3
Practical 6	Special school visit & report		3
Practical 7	IQ test (general intelligence test)		3
Practical 8	Buss- Perry aggression questionnaire		3
Practical 9	Sinha's comprehensive anxiety test		3
Practical 10	Emotional intelligence scale		3

Course Code 24BUHS3P03	Field project	Credits :2	No. of lectures in hrs.
Practical 1	Industrial visit report for study the organizational management.		6
Practical 2	Presentation of case study related to cybercrime.		6
Practical 3	To collect the data of environment related issues from print media and present the data.		6
Practical 4	To study blood groups during blood donation camps and make comparative data & Present the same.		6
Practical 5	Interview leaders from different fields and present the report.		6
Practical 6	Film/Book review on syllabus related topics.		6
Practical 7	RBI or any bank visit.		6
Practical 8	Collection of Data to work on population dynamic and statistic application.		6
Practical 9	Field visit/ Excursion / Biodiversity visits.		6
Practical 10	Presentation & preparation of balance diet chart		6

SEMESTER IV

Course Code	Course Title and Contents	Lectures	Credit Points
24BUHS4T01	Reproductive systems & hormone related disorders	30	2
Course objective: <ul style="list-style-type: none">To study reproductive systems, sexual hormone related problems & create awareness about the sex related issues and problems			
Unit I	Reproductive systems	15	
	<ul style="list-style-type: none">Internal male reproductive systemExternal male reproductive systemAccessory sex glandsInternal female reproductive systemExternal female reproductive systemReproductive cycle		
Unit II	Sex Hormone related disorders & diseases	15	
	<ul style="list-style-type: none">Hirsutism, virility ,Hermaphroditism and typesInfertility- in male and femaleDisorder of Puberty- Precocious puberty & delayed pubertyMenstrual Failure, menopause, andropausePCODBreast cancerProstate cancer.		
TEXT BOOK: 1. Human Physiology CC Chaterjee Central Book Agency 12th edition vol I and Vol-II 2018 2. Anatomy and Physiology Seeley Stephen Tale Mcgraw hill 2nd edition 2011 3. Principles of anatomy & physiology Bryan H. Derrickson & Gerard J. Tortora Wiley India Pvt. Ltd 15th edition 2016 4. Text book of heamatogyTejindar singh APC books 3rd Edition 2017 5. Practical book of Hematology Girish Kamat Japyee brothers medical publisher 1, Edition 2011 6. Short textbook of haematology B.S. Shah CBS publisher & dist5ribut5ors 1st edition 2014			
Course outcome: After studying this paper students should able to : <ul style="list-style-type: none">Educate themselves about sexuality and fertility.Gain knowledge about sex hormone related disorders			

Course Code	Course Title and Contents	Lectures	Credit Points
24BUHS4T02	Biotechnology	30	2

Course objective:

To understand Biotechnological applications in agriculture, medicine & industries.

Unit I	Genetically modified products.	15
	<ul style="list-style-type: none"> • Application in agriculture (Nitrogen Fixation, GM crop- papaya, tomato ,Potato, Maize, Soy bean) • Biotechnological application in livestock improvement: Transgenic animals. • Production and marketing of GM CROPS. • Plant based vaccines • Industrial production of acetic acid and citric acid. • BT Products 	
Unit II	Application of biotechnology	15
	<ul style="list-style-type: none"> • Application of Biotechnology in Pharmaceutical industry (production of hormones). • Biomolecules of nutritional significance- Antioxidants (Bioflavonoid, phytochemicals, Lycopene, Anthocyanin. • Genetic engineering in Ecoli & other Prokaryotes, Yeast, Fungi & Mammalian cells • Cloning vectors- Plasmids (pBR 322, pUC) • Vectors for plant & animal cells • Shuttle vectors, YAC vectors, Expression vectors • Applications of regenerative stem cells. 	

TEXT BOOK:

1. Elements of Biotechnology P.K. Gupta Rastogi publication - 2009
2. Biotechnology Fundamental and Application S.S . Purohit. Agrobios (India) 4th edition 2005
3. Biotechnology John Smith Cambridge University Press 5th edition 2009
4. Principles and Practice of Assisted Reproductive Technology, Vol. 2, Lab. Aspects of IVF & Andrology, - Kamini Rao. Jaypee Brothers Medical Publishers(P) Ltd Vol 2 2018
5. Infertility Diagnosis, Management & IVF Dr. Anil Dubey Jaypee Brothers Medical Publishers(P) Ltd - 2017
6. Assisted Reproductive Technology (Regulation) Bill, Kamini. A. Rao Jaypee Brothers Medical Publishers(P) Ltd 2nd Edition 2020

Course outcome: After studying this paper students should able to :

- i. Understand how genetically modified vegetables, fruits and other products are modified.
- ii. Learn application of biotechnology & construction of vectors.

Course Code	Course Title and Contents	Lectures	Credit Points
24BUHS4T03	Environmental science	30	2

Course objective: To understand different facets of the environment and their management.

Unit I	Environmental Science & laws	15
	<ul style="list-style-type: none"> • Introduction to Climate Systems: Atmosphere, Hydrosphere, Lithosphere, Cryosphere, Biosphere. • Human – Climate Interactions: Impacts of Natural Calamities on humans (E.g. Floods, Tsunami, Cyclones and Earthquakes) · Impacts of Human activities on Climate (Eg. Acid rains, Ozone depletion, Global Warming, climate change, Greenhouse effect, <i>El Nino</i> and <i>La Nina</i>) • Climate change- Causes and impacts. • Introduction to Environmental Laws: Air Act (1981), Water Act (1974), Noise Pollution Act (2000), Environment Protection Act (1986), Forest Act (1927). 	
Unit II	Environmental pollution and anthropological activities.	15
	<ul style="list-style-type: none"> • Air Pollution: Sources, effects and control measures • Water Pollution: Sources, effects and control measures • Soil Pollution: Sources, effects and control measures • Noise Pollution: Sources, effects and control measures • Waste management 	

TEXT BOOK:

1. Textbook of Environmental Studies for Undergraduate Courses 2nd Edition: Bharucha E.; Universities press (india p ltd)
2. Enviornmental studies by Dr.. K. Mukanti S. CHAND & COMPANY LTD.
3. Essential Enviornmental Studies by S.P. Mishra & S.N. Pandey Ane Books Pvt. Ltd.
4. Enviornmental Science by V.K. Ahluwalia & Sunita Malhotra 2nd Edition Ane Books Pvt. Ltd.

Course outcome: ● The learner will understand environmental science & policies for wellbeing of society

Course Code 24BUHS4P01	Course Title (Major) Practicals Based on 24BUHST02	Credits 2	No. of lectures in hrs.
Practical 1	Meat tenderization		6
Practical 2	Milk MBRT (Methylene blue reduction test)		6
Practical 3	Wrapping technique		6
Practical 4	Streaking technique		6
Practical 5	Preparation of slants, butt & plates		6
Practical 6	Isolation of organisms & study of colony characteristics		6
Practical 7	Study of E. coli growth curve		6
Practical 8	Horizontal gel electrophoresis		6
Practical 9	Polyacrylamide gel electrophoresis		6
Practical 10	Direct microscopic count (DMC) of milk		6

Course Code 24BUHS4P02	Course Title (Major) Practicals Based on 24BUHS4T03	Credits 2	No. of lectures in hrs.
Practical 1	Estimate of Dissolved oxygen from given water sample		4
Practical 2	Estimate amount of free Carbon dioxide from given water sample		4
Practical 3	Estimate phosphate-phosphorous from given water sample		4
Practical 4	Estimate nitrate- nitrite in given water sample		4
Practical 5	Determine pH of water sample with pH paper and Universal Indicator.		4
Practical 6	Determine pH of Soil sample with pH paper and Universal Indicator		4
Practical 7	Study of sound pollution monitoring & measuring instruments- HVS, Decibel meter		4
Practical 8	Estimate BOD of given sample of water		4
Practical 9	Estimate COD of given sample of water		4
Practical 10	Study of air pollution monitoring devices- Electrostatic precipitators, Fabric filters, Gravity Setting chambers, Catalytic convertor		4
Practical 11	Demonstration and working of pH meter.		4
Practical 12	Identification of indoor plants to reduce pollution		4
Practical 13	Case studies related to natural calamities		4
Practical 14	Case studies related to Man-made disasters		4
Practical 15	Identification of biological pollution indicators & bioremediation		4

Course Code	Humanities in Human Science	Lectures	Credit Points																		
24BUHS4T04	Social psychology & psychosocial issues related to sex																				
Course objective: <ul style="list-style-type: none">To understand causes of social behaviour & social thoughtTo understand different gender identities & sexual																					
Unit I	Social psychology- I	15																			
	<ul style="list-style-type: none">Social Psychology: A working definitionSocial Psychology : Scientific NatureFocus on Individual BehaviourCauses of Social Behaviour and ThoughtBrief History of Social Psychology Social cognition:Schemas: Mental Frameworks for organizing and using social information.HeuristicsAutomatic and controlled processing: basic modes of social thought.Potential Sources of error in social cognition. Affect and Cognition: how feelings shape thought and thought shapes feelings.																				
Unit II	LGBTQ spectrum	15																			
	<ul style="list-style-type: none">Sex, gender identity & sexual orientationLGBTQ+ communityTransgender, Third gender, lesbian, Gay.LGBTQ flags & symbolPsychosocial issues related to sex and fertility & acceptance.																				
TEXT BOOK: <table><tr><td>1.</td><td>Psychology</td><td>Saundra Ciccarelli, Glenn Mayer</td><td>Pearson</td><td>5th</td><td>2006</td></tr><tr><td>2.</td><td>Psychology</td><td>David G. Mayer</td><td>Macmillan (customised for Mumbai university)</td><td>10th edition</td><td>2013</td></tr><tr><td>3.</td><td>Theories of Personality</td><td>Fiest, Fiest, Roberts</td><td>McGraw Hill</td><td>9th edition (Indian)</td><td>2018</td></tr></table>				1.	Psychology	Saundra Ciccarelli, Glenn Mayer	Pearson	5th	2006	2.	Psychology	David G. Mayer	Macmillan (customised for Mumbai university)	10th edition	2013	3.	Theories of Personality	Fiest, Fiest, Roberts	McGraw Hill	9th edition (Indian)	2018
1.	Psychology	Saundra Ciccarelli, Glenn Mayer	Pearson	5th	2006																
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3.	Theories of Personality	Fiest, Fiest, Roberts	McGraw Hill	9th edition (Indian)	2018																
<ul style="list-style-type: none">Course outcome:To Understand and apply the theories of personalityTo get acquainted with researches in the fieldUnderstand the mental processes involved in thinking and reasoningTo study and apply theories of intelligence and factors affecting the same.																					

Course Code	Course Title and Contents	Lectures	Credit Points
23BUHS4T05 GE	Introduction to economics	30	02
Course objective: <ul style="list-style-type: none">To familiarize the students with the basic concepts of Micro Economics, Economic theories and its application.			
Unit I	Basic economics	15	
	<ul style="list-style-type: none">Micro economics- Meaning-Definition- Features- Distinction between Micro Economics and Marco Economics. Factors of Production - Meaning and Features of Land, Labour and Capital, Types of Capital, Entrepreneur Qualities and functions.Concept of Demand- Types of Demand- Determinants of market demand- Law of Demand-Elasticity of Demand- Income, Cross & Promotional- Consumer Surplus- Demand forecasting Meaning of Total Output. Stock and Supply- Supply of Individual Seller and Market Supply Determinants of Market Supply and Law Supply.		
Unit II	Classification of markets	15	
	<ul style="list-style-type: none">Forms of Market and Price Determination - PerfectCompetition - Price determination under perfect competitionMonopoly- Meaning, Features and types MonopolisticCompetition, Meaning and Features of Oligopoly.Market strategyGeographical distribution of marketWTO policiesOnline marketingConsumer psychology and behaviour		
TEXT BOOK: 1. Advanced economic theory Ahuja H.L. S. Chand and company 21st 2005 2. Micro economics : Theory and applications Dwivedi, D.N Pearson Education (Singapore) Pvt Ltd, Delhi 6th 2003 3. Modern economics Koustsoyiannis Macmillan Press Ltd. London 2nd 1980			
Course outcome: After studying this paper students should able to : <ul style="list-style-type: none">Differentiate between micro & macroeconomicsPredict market demand, price of commodities, st5ock and supply, consumptions			

Course Code 24BU4VSC04 VSC	Course Title VSC Social Perception	Credits 3	No. of lectures	
Course Outcomes: i. Understand the mental processes involved in the social behaviour ii. Identify the social behaviour, and the causes for the same understand the nature and the science of social behavior				
Unit I:	Social Perception: <ul style="list-style-type: none">• Concept of Attribution• Theories of Attribution• Errors and Biases in Attribution• Impression Formation Prosocial and Antisocial Behavior <ul style="list-style-type: none">• Concept of Prosocial Behavior and related concepts• Bystander Effect• Determinants of Prosocial Behavior• Theories of Altruism• Antisocial Behavior Interpersonal Attraction and close Relationship, Stereotyping, Prejudice, and Discrimination	By conducting different practical related to bystander effect and case based studies on theories and some real life incidents.	Assessment Internal assessment (15+10=25) & practical (25)	15

Course Code	Course Title and Contents	Lectures	Credit Points
23BU4AEC07 IKS	Introduction to Archaeology & Economics		
Course objective: To introduce the students to basic concepts of Anthropology and Archaeology.			
Unit I	Temple archaeology and water management system in ancient India		15
	Temple architecture <ul style="list-style-type: none"> • Origin and development of temples • Main features of temple architecture • Features of Nagara, Vesara, Dravida and Bhumija temples. Water management system in ancient India <ul style="list-style-type: none"> • Northern region • Southern region • Central Indian region • Irrigation methods in Indus valley civilization 		
Unit II	History & advances in economics		15
	<ul style="list-style-type: none"> • Barter system: meaning, importance, advantages, disadvantages and types. • National income-meaning and definition, estimation of national income, difficulties. • Money- Meaning and Functions of Money, Supply of Money, Constituents of Money supply. Measures of Money Supply in India (including Liquidity Concepts). • Crypto currency • Dowry system 		
<p style="text-align: center;">TEXT BOOK:</p> <p>1. Water management and hydraulic engineering in India (c. 600BCE- CE 1200)</p> <p>2. Ancient traditional water and agricultural management systems- A collection of papers from the national seminar on water and culture , Sahayoga and Kannada University, Hampi, 2007.</p> <p>3. Encyclopedia of Indian temple architecture- K.M.Suresh, E.Siva Nagi Reddy, N.C. Panda.</p>			
<ul style="list-style-type: none"> • Course outcome: After studying this paper students should able to : • Understand technology of digital currency • The learner will get knowledge of branches & source of anthropology. • To study the basics of archaeology, excavations & antiquities. • The learner will understand the importance of heritage/ culture & conservation of heritage 			

Course Code	Course Title (VSC) Practicals based on 24BU3VSC04	Credits 1	No. of lectures in hrs.
Practical 1	Bystander effect case study.		3
Practical 2	Perceived stress scale.		3
Practical 3	Stroop test.		3
Practical 4	Indian trail making test.		3
Practical 5	Administration, scoring LOC.		3
Practical 6	Case study on prosocial behavior.		3
Practical 7	Orphanage/ Old age visit & make report on it.		3
Practical 8	Reactive- Proactive Aggression test.		3
Practical 9	Identification, hypothesis, design and variable.		3
Practical 10	Multidimensional scale of perceived social support		3

Course Code 24BUHS4P03	FIELD PROJECT	Credits 2	No. of lectures in hrs.
Practical 1	To study the International currencies and explain the exchange value.		5
Practical 2	Review of heritage site.		5
Practical 3	Heritage site visit (Archeological visit) & report submission.		5
Practical 4	Biodiversity visit- (National park and sanctuary) & report submission.		5
Practical 5	Industrial visit & report submission		5
Practical 6	Feasibility report for entrepreneur activity.		5
Practical 7	To collect the data of LGBT related issues from print media and present the data.		5
Practical 8	Interview entrepreneur from different fields and present the report		5
Practical 9	Survey organic products in market and present the report.		5
Practical 10	Different methods to calculate national income.		5
Practical 11	Field Visit to market(Fish, clothing, flower market, timber market, furniture market, jewellery market or seasonal market)s & report submission.		5

Practical 12	Extraction of heavy metals from soil & make the report	5
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Evaluation Scheme

Internals

Class Test	Active Participation & Leadership qualities	Total
10 (internals)	-	20
10 (Certificate course presentation)		

Internal Examination: Based on Unit 1 / Unit 2 / Unit 3

Duration: 30 min

Total Marks: 10

Q. 1.	A. Multiple choice question	2.5
Q. 1.	B. Objectives.	2.5
Q. 2.	B. Answer in brief (Any two)	5

Theory Examination:**Duration: 1.30Hours****Total Marks: 30**

- All questions are compulsory

Q. 1	Answer <i>any two</i> of the following		10
	A	Based on Unit I	
	B	Based on Unit I	
	C	Based on Unit I	
	D	Based on Unit I	
Q. 2	Answer <i>any two</i> of the following		10
	a	Based on Unit II	
	b	Based on Unit II	
	c	Based on Unit II	
	d	Based on Unit II	
Q. 3	Fill in the blanks (<i>any five</i>)		5
	a	Based on Unit I	
	b	Based on Unit I	
	c	Based on Unit I	
	d	Based on Unit I	
	e	Based on Unit I	
	f	Based on Unit II	
	g	Based on Unit II	
S	h	Based on Unit II	
	i	Based on Unit II	
	j	Based on Unit II	
Q. 4	Answer in one <i>sentence (any five)</i>		5
	a	Based on Unit I	
	b	Based on Unit I	
	c	Based on Unit I	
	d	Based on Unit I	
	e	Based on Unit I	
	f	Based on Unit II	

	g	Based on Unit II	
	h	Based on Unit II	
	i	Based on Unit II	
	j	Based on Unit II	
	k	Based on Unit II	

Practical Examination

Semester _____ Practical Examination “Month & Year “

Paper Code :- _____

Duration: - 02.00 hrs.

Total Marks: - 50

Q. No	Question's	Marks
Q. 1.	(Major)	
Q. 2.	(Minor)	
Q. 3.	(Identification)	
Q. 4.	(Viva)	
Q. 5.	(Jounal)	

Marks Distribution and Passing Criterion for Each Semester

Theory					Practical		
<u>SEMESTER 3</u>							
Course Code	Internals	Min marks for passing	Theory Examination	Min marks for passing	Course Code	Practical Examination	Min marks for passing
24BUHS3T01	20	8	30	12	24BUHS3P01	50	20
24BUHS3T02	20	8	30	12	24BUHS3P02	50	20
24BUHS3T03	20	8	30	12	-	-	-
24BUHS3T04	20	8	30	12	-	-	-
24BUHS3T05	20	8	30	12	-	-	-
24BU3AEC06	20	8	30	12	-	-	-
24BU3VSC06	50	20	-	-	-	-	-
24BUHS3P03							
CC					-	-	-
<u>SEMESTER 4</u>							
24BUHS4T01	20	8	30	12	24BUHS4P01	50	20
24BUHS4T02	20	8	30	12	24BUHS4P02	50	20
24BUHS4T03	20	8	30	12	-	-	-
24BUHS4T04	20	8	30	12	-	-	-
24BUHS4T05	20	8	30	12	-	-	-
24BU4AEC07	20	8	30	12	-	-	-
24BU4VSC04	50	20	-	-	-	-	-
24BUHS4P03					-	-	-
CC					-	-	-

Pedagogy for student engagement is predominantly lectures. However, other pedagogies enhancing better student engagement to be recommended for each course. The list includes active learning/ course projects/ problem or project based learning/ case studies/self-study like seminar, term paper or MOOC

\$ Every course needs to include assessment for higher order thinking skills (Applying/ Analyzing/ Evaluating/ Creating). However, this column may contain alternate assessment methods that help formative assessment (i.e. assessment for learning)

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark 'X' in the intersection cell if a course outcome addresses a particular program outcome.

References:

Text books:

Date Course Co-ordinator Subject Committee Chairperson

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