

**Academic Council Meeting No. and Date : April 21, 2023**

**Agenda Number : 4**

**Resolution Number : 23,24 / 4.7 & 4.13**



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



**Syllabus for  
Programme : Bachelor of Science  
Specific Programme : Human Science**

**[ T.Y.B.Sc. (Human Science) ]**

**Revised under Autonomy  
From academic year 2023 - 2024**

## **Preamble**

□ Course Structure & Distribution of Credits: B. A / B. SC. in Human Science consists of 5 (Five) theory courses, 3 (Three) practical lab courses in each Semester. Each theory course will be of either of 2/4 (two/four) credits, a practical lab course will be of 2 (two) credits. A learner earns 20 (twenty) credits per semester and a total 120 (one hundred twenty) credits in six semesters.

**Eligibility:** B. Sc. in “Human Science” Program is open to candidates who have passed HSC. Examination in Arts or Science from Board of Maharashtra or its equivalent board.

**Duration:** 3 years

**Mode of Conduct** : Laboratory practical / Offline lectures.

### **Program specific Outcome**

The B.Sc. Human Science is designed to give better opportunity chances in jobs, higher education. The three years course (six semesters) is an amalgamation of various disciplines of sciences namely psychology, sociology, anthropology, palaeontology, neuroscience, genetics, home science, law, IT and other allied spheres of knowledge. The course involves data collection, presentations. The learner can pursue masters in M.A Anthropology, Sociology, History, Psychology, M.Sc. in Biodiversity, Environmental sciences, Forensics science, Nutrition and dietetic, also can take admission in LLB, MBA, MMS. Even after graduation they can placed in Government offices, Municipal Corporations, private companies, Banks, HR, Museum curator, medical transcriptionist, hospital administration, or in schools college as teachers.

**T. Y. B. Sc. (Human Sciences)**  
**Structure of Semester V**

<b>Course Code</b>	<b>Course Title</b>	<b>Lectures</b>	<b>Credit Points</b>
<b>BNBUSHS5T1</b>	<b>Industrial Psychology</b>	45	<b>2</b>
<b>BNBUSHS5T2</b>	<b>Constitutional Law , Family law, Human right (fundamental rights) , Women &amp; Children right , Legal agreements.</b>	45	<b>2</b>
<b>BNBUSHS5T3</b>	<b>Entrepreneurship Management</b>	45	<b>4</b>
<b>BNBUSHS5T4</b>	<b>Nutritional Biochemistry</b>	45	<b>4</b>
<b>BNBUSHS5T5</b>	<b>Human developmental (fertilization onwards), surrogacy and ageing</b>	45	<b>2</b>
<b>BNBUSHS5P1</b>	Based on BNBUSHS5T2 , BNBUSHS5T3 & BNBUSHS5T4		<b>2</b>
<b>BNBUSHS5P2</b>	Based on BNBUSHS5T1 & BNBUSHS5T5		<b>2</b>
<b>BNBUSHS5P3</b>	Project Work: Case Studies for Entrepreneurship: Success and failure		<b>2</b>
<b>Total</b>			<b>20</b>

**Structure of Semester VI**

<b>Course Code</b>	<b>Course Title</b>	<b>Lectures</b>	<b>Credit Points</b>
<b>BNBUSHS6T1</b>	Clinical psychology, Mood and Anxiety Disorders, Psychotherapy(counseling) industrial psychology, Health psychology , ethics	<b>45</b>	<b>2</b>
<b>BNBUSHS6T2</b>	Environmental Science: Pollution, Environment impact assessment Disaster management,	<b>45</b>	<b>2</b>
<b>BNBUSHS6T3</b>	Forensic Science Forensic psychology and Forensic toxicology	<b>45</b>	<b>4</b>
<b>BNBUSHS6T4</b>	Home Science : Microbiology, Preservation, Adulteration, Food Service Management and Exercise Physiology.	<b>45</b>	<b>4</b>
<b>BNBUSHS6T5</b>	IT: m-commerce, Interactive Computer graphic, Multimedia system	<b>45</b>	<b>2</b>
<b>BNBUSHS6P1</b>	Based on BNBUSHS6T1 and BNBUSHS6T2		<b>2</b>
<b>BNBUSHS6P2</b>	Based on BNBUSHS6T3, and BNBUSHS6T4		<b>2</b>
<b>BNBUSHS6P3</b>	Project Work: Case Studies for Entrepreneurship: Success and failure		<b>2</b>
<b>Total</b>			<b>20</b>

## Semester V Syllabus

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS5T1</b>	<b>Industrial Psychology</b>	<b>45</b>	<b>2</b>
<ul style="list-style-type: none"> <li>To understand importance of industrial psychology, develop skills related to organization</li> </ul>			
<b>Unit I</b>	<b>Introduction to I/O Psychology:</b> <ul style="list-style-type: none"> <li>What is I/O psychology</li> <li>Assessment of Jobs, Performance and People:</li> <li>Job Analysis</li> <li>Performance appraisal</li> </ul>		<b>15</b>
<b>Unit II</b>	<b>Selecting and training employees:</b> <ul style="list-style-type: none"> <li>Planning needs, recruiting applicants, selecting employees</li> <li>Getting APPLICANTS TO ACCEPT AND KEEP JOBS OFFERED</li> <li>Needs assessment, Training design</li> <li>Delivery of training program</li> <li>Evaluation of training program</li> </ul>		<b>15</b>
<b>Unit III</b>	<b>Individual and organization:</b> <ul style="list-style-type: none"> <li>Theories of employee motivation</li> <li>Feelings about work- Job satisfaction,</li> <li>Effects of job satisfaction, organization commitment,</li> <li>Emotions at work</li> </ul>		<b>15</b>
<b>Course outcome - After studying this paper students will be able to -</b> <ul style="list-style-type: none"> <li>Apply recruitment and managerial skills at workplace</li> <li>Manage the challenges at workplace effectively</li> </ul>			

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS5T2</b>	<b>Constitutional Law , Family law, Human right (fundamental rights) , Women &amp; Children right , Legal agreements.</b>	<b>45</b>	<b>2</b>
<ul style="list-style-type: none"> <li>To understand constitution, fundamental rights and laws.</li> </ul>			
<b>Unit I</b>	<ul style="list-style-type: none"> <li>Indian Constitution -An Overview</li> <li>Fundamental Rights and Duties</li> <li>Directive Principle of State Policy</li> <li>UCC, RTI, PIL</li> </ul>		<b>15</b>
<b>Unit II</b>	<ul style="list-style-type: none"> <li>Family Law – (Hindu and Muslim) Marriage &amp; Divorce</li> <li>Women empowerment</li> <li>Offences against women and children and corrective measures</li> <li>138 of N.I. Act, 1881</li> </ul>		<b>15</b>
<b>Unit III</b>	<ul style="list-style-type: none"> <li>Will</li> <li>Gift Deed</li> <li>Agreement</li> <li>POA</li> </ul>		<b>15</b>
<b>Course outcome - After studying this paper students will be able to -</b> <ul style="list-style-type: none"> <li>Apply fundamental rights and duties in daily life</li> <li>Deal with the power of attorney and legal agreements</li> </ul>			

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS5T3</b>	<b>Entrepreneurship Management</b>	<b>45</b>	<b>4</b>
<ul style="list-style-type: none"> <li>To develop managerial skills and understand legality involved in business ownership.</li> </ul>			
<b>Unit I</b>	<ul style="list-style-type: none"> <li>Concept of management</li> <li>Level of management</li> <li>General concept of entrepreneurship: Definition and Challenges</li> <li>Entrepreneurial Motivation</li> <li>Building business plan: Strategic management Form of ownership Franchising</li> </ul>	<b>15</b>	
<b>Unit II</b>	<ul style="list-style-type: none"> <li>Financial issues: Managing Cash Flows Financial Plan</li> <li>Marketing the company: Marketing Plan Creativity E-commerce and New internet Entrepreneurs</li> <li>Staffing and Leading</li> </ul>	<b>15</b>	
<b>Unit III</b>	<ul style="list-style-type: none"> <li>Legal forms of business ownership: Taxation Legal issues</li> <li>Entrepreneurs competencies: Decision making and problem solving Communication Creativity and business opportunity identification</li> <li>Entrepreneurial success and failures</li> </ul>	<b>15</b>	
<b>Course outcome - After studying this paper students will be able to -</b> <ul style="list-style-type: none"> <li><b>Apply entrepreneurship management skills</b></li> <li><b>Manage customer relationships</b></li> <li><b>Perform tasks with professionalism</b></li> </ul>			

Course Code	Course Title and Contents	Lectures	Credit Points
BNBUSHS5T4	Nutritional Biochemistry	45	4
● To understand the basic elements of food biochemistry.			
Unit I	<b>Carbohydrates:</b> Composition and Classification, Source, functions. and properties. Nutritional significance of dietary fibers.	15	
Unit II	<b>Proteins:</b> Composition, classification, sources, and functions. Nutritional	15	
	Classification of amino acids. <b>Enzymes:</b> Classification and factors affecting enzyme activity and enzymes of clinical significance.		
Unit III	<b>Lipids:</b> Composition, sources, functions, deficiency and excess, fatty acids-essentials and non -essential, SFA, USFA, MUFA, PUFA, significance of Fatty acids.	15	
<b>Course outcome - After studying this paper students will be able to -</b> <ul style="list-style-type: none"><li>● Apply the importance and sources of biomolecules</li><li>● Differentiate between essential and non-essential micro-molecules</li><li>● Carry out clinical research using enzymes</li></ul>			

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS5T5</b>	<b>Human developmental (fertilization onwards), surrogacy and ageing</b>	<b>45</b>	<b>2</b>
<div><input type="checkbox"/> To understand stages in human development and sexuality.</div> <div><input type="checkbox"/> To understand the ageing process and related problems.</div>			
<b>Unit I</b>	<ul style="list-style-type: none"><li>● Human development – Biological, psychological, behavioral</li><li>● Factors influencing biological and psychological development (Mother and Foetus)</li><li>● Post -Traumatic Stress Disorder- Social, Psychological, Biological, Treatment.</li><li>● Human dev. Stages (prebirth, birth, infancy, early, middle and late childhood, adolescence, early, middle and late adulthood, death)</li></ul>	<b>15</b>	
<b>Unit II</b>	<ul style="list-style-type: none"><li>● Evolution of human sexuality</li><li>● Surrogacy – meaning and legal aspects</li><li>● Birth control measures</li><li>● STD and Types of STD</li></ul>	<b>15</b>	
<b>Unit III</b>	<ul style="list-style-type: none"><li>● Aging – Meaning, natural process, physiology of aging, apoptosis</li><li>● Causes of aging – Oxidative loss, concept of telomere,</li><li>● Problems- Eye, Ear, Memory, Strength, Arteries, Stamina, Neuro-degenerative disorders</li><li>● Aging and population- In context to Global, India, other developing Countries</li></ul>	<b>15</b>	
<b>Course outcome - After studying this paper students will be able to -</b> <ul style="list-style-type: none"><li>● <b>Identify embryological stages (Physical and psychological)</b></li><li>● <b>Deal with legal and ethical aspects of surrogacy</b></li><li>● <b>Observe different factors accelerating aging</b></li></ul>			



## Semester V

### Practicals

*Identification for all practicals should be shown with available models, photographs, Google images, diagrams from books whichever is available*

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS5P1</b>	<b>PRACTICAL-I BASED ON BNBUSHS5T2, BNBUSHS5T3 &amp;BNBUSHS5T4</b>	<b>03 / Week</b>	<b>02</b>
<ol style="list-style-type: none"> <li>1. Separation of amino acid by paper chromatography</li> <li>2. Estimation of lipid by phosphovanilline method from the given sample of serum</li> <li>3. Effect of pH on amylase activity (kinetics).</li> <li>4. Effect of temperature on amylase activity</li> <li>5. Effect of substrate concentration on amylase activity.</li> <li>6. Identification               <ol style="list-style-type: none"> <li>a. Glucometer.</li> <li>b. Malnutrition disorder- Marasmus , Kwashiorkar</li> <li>c. Identify the source from the given sample. ( Carbohydrate/ Protein/ lipids)</li> </ol> </li> <li>7. Case study               <p>Following are the case studies of reaction of people when:-</p> <ol style="list-style-type: none"> <li>a. Terrorist attack on mall</li> <li>b. Dilapidated building falls (case) Joseph d'souza and others v/s state of Maharashtra.</li> <li>c. Road accident (case) PanditParmanandKatara v/s union government of India</li> </ol> <p>( immediate treatment)</p> <p>d.Bank robbery</p> <p>e. Plane hijack</p> <p>f.Railway accident (case) Bhagat Singh and Sohan Singh v/s Om Sharma and others (compensation in railway accident)</p> </li> <li>8. Case study               <ol style="list-style-type: none"> <li>a. Presentations on New Successful Startups Established Entrepreneurs</li> <li>b. Case Studies on Successful Ventures Failed ventures</li> <li>c. Preparation of Blueprint on Workable Business Model</li> </ol> </li> </ol>			

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS5P2</b>	<b>PRACTICAL-II BASED ON BNBUSHS5T1 &amp;BNBUSHS5T5</b>	<b>03 / Week</b>	<b>02</b>
<ol style="list-style-type: none"> <li>1. Solve case studies on the effect of post-traumatic stress disorder on an individual.</li> <li>2. Beck Anxiety Inventory.( BAI)</li> <li>3. Beck Depression Inventory. (BDI)</li> <li>4. Case studies <ol style="list-style-type: none"> <li>a. Related to violation of fundamental rights-</li> <li>b. IC Golaknath v/s state of Punjab</li> <li>c. Keshwananand Bharti v/s state of Kerala ( related to prisoners rights)</li> <li>d. M.C Mehta v/s union of India (Bhopal gas tragedy)</li> <li>e. Minerva mill v/s union of India</li> </ol> <p>Related to consumer protection act 1986-</p> <ol style="list-style-type: none"> <li>f. Murlideora v/s union of India (ban on smoking at public places)</li> <li>g. Shriram fertilizer v/s union of India (Bhopal gas tragedy)</li> </ol> </li> <li>5. Identification on Human development embryo (Photographs)</li> <li>6. Different types of birth control (Photographs)</li> <li>7. Different types of Sexually transmitted Diseases (Photographs )</li> </ol>			

Duration- 4 hrs.

Total marks- 100

**PRACTICAL EXAMINATION**  
**T. Y. B. Sc. Semester- V**  
**Code BNBUSHS5P1**

**Duration: 3 Hrs**

**Total Marks : 100**

<b>Q. I</b>	<b>Major Experiment</b>	<b>30 Marks</b>
	Separation of amino acid by paper chromatography	
	<b>OR</b>	
	Estimation of lipid by phosphovanilline method from the given sample of serum	
	<b>OR</b>	
	Effect of pH/temp/concentration on amylase activity	
<b>Q. II</b>	<b>Minor Experiment</b>	<b>20 Marks</b>
	Case studies from entrepreneur management.	
<b>Q. III</b>	<b>Identify and describe two from each group</b>	<b>30 Marks</b>
	<ul style="list-style-type: none"><li>● Identification of glucometer.</li><li>● Identify the malnutrition disorder</li><li>● Identify the source from the given sample. ( Carbohydrate/ Protein/ lipids)</li></ul>	
<b>Q. IV</b>	<b>Viva Voce</b>	<b>10 Marks</b>
<b>Q. V</b>	<b>Journal</b>	<b>10 Marks</b>

Duration- 4 hrs.

Total marks- 100

**PRACTICAL EXAMINATION**  
**T. Y. B. Sc. Semester- V**  
**Code BNBUSHS5P2**

**Duration: 3 Hrs**

**Total Marks : 100**

<b>Q. I</b>	<b>Major Experiment</b>	<b>30 Marks</b>	
	Report on Anxiety (BAI)		
	<b>OR</b>		
	Report on Depression (BDI)		
<b>Q. II</b>	<b>Minor Experiment</b>	<b>20 Marks</b>	
	Case studies on Post traumatic stress disorder		
<b>Q. III</b>	<b>Identify and describe two from each group</b>	<b>30 Marks</b>	
	<ul style="list-style-type: none"><li>• Stages Of Human Development.</li><li>• Measures of birth control (photos)</li><li>• STDs (photos)</li></ul>		
<b>Q. IV</b>	<b>Viva Voce</b>	<b>10 Marks</b>	
<b>Q. V</b>	<b>Journal</b>	<b>10 Marks</b>	

**PRACTICAL EXAMINATION**  
**T. Y. B. Sc. Semester- V**  
**Code BNBUSHS5P3**

**Duration: 3 Hrs**

**Total Marks : 100**

Evaluation to be done during practical examination.	
Q. 1 <b>Two case studies</b> to be performed during examination based on law & management	<b>30</b>
Q. 2    Report submission, Presentation and Viva based on Entrepreneurship management	<b>50</b>
Q. 3    Report of Excursion/ Field report/ Institutional visit	<b>20</b>

## Semester VI Syllabus

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS6T1</b>	Clinical psychology, Criminal psychology, Mood and Anxiety Disorders, Psychotherapy (counseling, yoga, spirituality, meditation, Hypnotisium ) industrial psychology, Health psychology , ethics	<b>45</b>	<b>2</b>
<ul style="list-style-type: none"> <li>To understand clinical aspects of psychopathology, psychotherapy and health issues.</li> </ul>			

<b>Unit I</b>	<b>Clinical Psychology</b> <ul style="list-style-type: none"> <li>Defining Abnormality and historical perspectives of abnormality.</li> <li>Panic Disorder and treatments</li> <li>Phobias-Types, Treatment.</li> <li>Obsessive Compulsive Disorder- Symptoms, Treatment.</li> <li>Mood Disorders- Unipolar and Bipolar Disorder, Treatment.</li> </ul>	<b>15</b>
<b>Unit II</b>	<ul style="list-style-type: none"> <li>Fundamental precepts of effective counselling</li> <li>Stages and outcome goals of counselling</li> <li>Counsellor Actions that hamper communication with clients.</li> <li>Ethical principles of professional counseling (Termination) and violation</li> <li>Overview of major therapies in counselling- CBT, PCT, Gestalt, BT.</li> </ul>	<b>15</b>
<b>Unit III</b>	<ul style="list-style-type: none"> <li>Definition and Importance of Health Psychology</li> <li>Characteristics of health compromising behavior. (Alcoholism, Drinking and smoking problem)</li> <li>Placebo as healer</li> <li>Pain and it's Management:               <ol style="list-style-type: none"> <li>Clinical issues in pain management</li> <li>Pain and Personality</li> <li>Pain control techniques- (Pharmacological, Surgical, sensory, biofeedback)</li> </ol> </li> <li>Alternative Techniques in pain management: Relaxation, Hypnosis, Acupuncture, Yoga, Distraction and guided imagery.</li> </ul>	<b>15</b>

**Course outcome - After studying this paper students will be able to -**

- Diagnose & plan treatment for disorders**
- Understand & apply different perspectives in psychotherapy**
- Share insight about psychological factors affecting health**

Course Code	Course Title and Contents	Lectures	Credit Points
BNBUSHS6T2	Environmental Science: Pollution, Environment impact assessment Disaster management	45	2
<ul style="list-style-type: none"> <li>To understand different facets of the environment and their management.</li> </ul>			
Unit I	<b>Environmental Pollution: Monitoring and Mitigation:</b> <ul style="list-style-type: none"> <li>Air Pollution: Sources, effects and control measures</li> <li>Water Pollution: Sources, effects and control measures</li> <li>Soil Pollution: Sources, effects and control measures</li> <li>Noise Pollution: Sources, effects and control measures</li> <li>Waste management</li> </ul>	15	
Unit II	<b>Environment Impact Assessment:</b> <ul style="list-style-type: none"> <li>Concept &amp; process of EIA: Need of EIA; Scope and objectives;</li> <li>Types of environmental impacts; Steps involved in conducting the EIA Studies</li> <li>Concept of Carbon footprints&amp; Carbon credits.</li> <li>Concept of Life Cycle Assessment and Environmental Quality Monitoring: ISO-14000</li> </ul>	15	
Unit III	<b>Disaster Management:</b> <ul style="list-style-type: none"> <li>Natural Hazards (Eg. Tsunami, Floods, Earthquakes, Cyclone, droughts, etc.): Causes, Impacts and mitigation</li> <li>Industrial hazards (fire, explosion, toxic release and dispersion): Causes, Impacts and mitigation</li> <li>Industrial Hygiene and Safety</li> </ul>	15	
<b>Course outcome - After studying this paper students will be able to -</b> <ul style="list-style-type: none"> <li>Identify different environmental issues</li> <li>Share insight of EIA</li> <li>Identify causes, effects &amp; management of disasters</li> </ul>			

Course Code	Course Title and Contents	Lectures	Credit Points
BNBUSHS6T3	Forensic psychology, Forensic Science and Forensic Toxicology	45	2
<ul style="list-style-type: none"> <li>To study forensic science and psychology of crime scenario</li> </ul>			
Unit I	<ul style="list-style-type: none"> <li><b>Forensic psychology:</b> definition and Functions</li> <li>Brain Damage Theories and Types of crime- organised crime, sexual offences, juvenile</li> <li>Theories of crime- social, behavioural and psychological</li> <li>Forensic psychological investigative techniques- polygraph, Narcoanalysis,</li> </ul>	15	
Unit II	<p><b>Forensic Science:</b></p> <ul style="list-style-type: none"> <li>Basic Principles &amp; Significance</li> </ul> <p><b>Crime Scene Evidences</b></p> <ul style="list-style-type: none"> <li>Blood, Semen &amp; other Biological fluids</li> <li>Viscera</li> <li>Bite Marks</li> <li>Hair – Animal &amp; Human, Fibres&amp; Fabrics</li> <li>Pollen grains.</li> <li>Diatoms</li> <li>Crime scene management.</li> </ul> <p><b>Establishment of identity of Individuals</b></p> <ul style="list-style-type: none"> <li>DNA</li> <li>Fingerprints</li> </ul> <p><b>Anthropology – Skeletal Remains</b></p> <ul style="list-style-type: none"> <li>Role of Police officers</li> <li>Role of Forensic scientists</li> </ul> <p>Role of medico-legal doctors.</p>	15	
Unit III	<p><b>Forensic Toxicology:</b></p> <ul style="list-style-type: none"> <li>Drug of Abuse and narcotic drugs</li> <li>Petroleum products</li> <li>Toxicological examination of poisons and alcohol</li> <li>Toxicological examination of viscera</li> </ul>	15	
<p><b>Course outcome: After studying this paper students will be able to -</b></p> <ul style="list-style-type: none"> <li>Handle the crime scene and handle evidence.</li> <li>Identify the ill effects of drug abuse.</li> <li>Use forensic psychology and criminology as a part of investigation.</li> </ul>			



Course Code	Course Title and Contents	Lectures	Credit Points
BNBUSHS6T4	Home Science : Microbiology, Preservation, Adulteration, Food Service Management and Exercise Physiology.	45	4
<ul style="list-style-type: none"> <li>● To understand the intricacies of Food Science and it's management</li> <li>● To understand the Physiology of Exercise.</li> </ul>			
Unit I	<b>Microbiology of food:</b> <ul style="list-style-type: none"> <li>● <b>Microbial flora, spoilage, sources, characteristics and contamination in the following foods</b> Vegetables, fruits, sea foods, meat products, milk and milk products.</li> <li>● <b>Techniques of food preservation</b> – Temperature (High and low). Use of ionizing radiations and microwave heating:</li> <li>● <b>Use of dehydration and concentration</b> Methods and techniques used (Air convection, Drum dryers and Vacuum dryers)</li> <li>● <b>Food Adulteration:</b> Common food adulterants, detection and safe limits.</li> </ul>	15	
Unit II	<b>Food Service management:</b> <ul style="list-style-type: none"> <li>● Classification of food service operations Recent trends in food service Systems . Types of food service systems Menu Planning ,Types of Menus Menu presentation, Writing, Design and format Menu Marketing</li> <li>● Storage and Inventory Production: Recipe formulation, Kitchen Design and Layout. Styles of service and Service management.</li> <li>● Food Handling and prevention of food borne illness.</li> <li>● Personal Hygiene and Environmental Sanitation</li> <li>● Waste disposal, pest control, Standards for food safety and sanitation</li> <li>● Human Resource Management- Recruitment and Selection process Training and Development Performance Appraisal, Leadership and Motivation</li> </ul>	15	
Unit III	<b>EXERCISE PHYSIOLOGY:</b> <b>Body composition and sports performance</b> <ol style="list-style-type: none"> <li>An overview of human body composition</li> <li>Factors influencing body composition-age, sex, etc.with special emphasis on exercise.</li> </ol> <b>Muscle physiology and skeletal fitness</b> <ol style="list-style-type: none"> <li>Types of muscle exercise- endurance, resistance and flexibility; and their effect on the composition and strength of muscle.</li> <li>Effect of training on muscle</li> <li>Muscle and bone injury during exercise.</li> </ol> <b>Cardiovascular &amp; pulmonary response to exercise</b> <ol style="list-style-type: none"> <li>Physiology of cardiovascular system</li> <li>Effect of aerobic and anaerobic exercise training on pulmonary and cardiovascular fitness.</li> <li>Role of exercise in the diseases of CV &amp; pulmonary system</li> </ol> Suitable exercise programme for special conditions; therapeutic conditions, Weight reduction and Weight Management.	15	
<b>Course outcome - After studying this paper students will be able to -</b> <ul style="list-style-type: none"> <li>● Apply the preservation techniques in food industry</li> <li>● Improve menu designing skills</li> </ul>			

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS6T5</b>	<b>Information Technology: M-commerce, Interactive Computer Graphic, Multimedia System</b>	<b>45</b>	<b>4</b>
<ul style="list-style-type: none"> <li>To understand the advanced know-how in Information Technology.</li> </ul>			
<b>Unit I</b>	<b>Computer Graphics-</b> <ul style="list-style-type: none"> <li>Introduction to Image and Objects, Bitmap and Vector-Based Graphics, Applications of Computer Graphics,</li> <li>Display Devices, Cathode Ray Tubes, Raster Scan Display, Random-Scan Display, Flat Panel Display, Input Technology,</li> <li>Coordinate System Overview, Introduction to 2D and 3D Graphics, Key-Frame Animation, Construction of an Animation Sequence, Motion Control Methods, Procedural Animation, Key-Frame Animation vs. Procedural Animation,</li> <li>Introduction to Morphing, Three-Dimensional Morphing</li> </ul>	<b>15</b>	
<b>Unit II</b>	<b>Multimedia:</b> <ul style="list-style-type: none"> <li>Introduction, scope of multimedia. Applications of multimedia,</li> <li>Hardware and software requirements, multimedia database,</li> <li>Analog representation, waves, digital representation, need for digital representation, A to D conversion, D to A conversion, relation between sampling rate and bit depth, Quantization error</li> </ul>	<b>15</b>	
	<ul style="list-style-type: none"> <li>Types of text, Font, insertion, compression, File formats. Types of images, colour models, Basic steps for image processing, principle and working of scanner and digital camera</li> </ul>		
<b>Unit III</b>	<b>M-Commerce :</b> <ul style="list-style-type: none"> <li>Introduction – Infrastructure Of M– Commerce – Types Of Mobile Commerce Services.</li> <li>Technologies Of Wireless Business – Benefits And Limitations, Support, Mobile Marketing &amp; Advertisement, Non– Internet Applications In M– Commerce – Wireless/Wired Commerce Comparisons</li> </ul>	<b>15</b>	
<b>Course outcome - After studying this paper students will be able to -</b> <ul style="list-style-type: none"> <li><b>Incorporate application of M- commerce in day to day life</b></li> <li><b>Make 2D &amp; 3D Graphics &amp; animation</b></li> <li><b>Calculate national income</b></li> <li><b>Analyse demand, quantity and price</b></li> </ul>			

## Semester VI :Practicals

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS6P1</b>	<b>Practical – I</b> <b>Based on BNBUSHS6T1 &amp; BNBUSHS6T2</b>	<b>03 / Week</b>	<b>02</b>
<ol style="list-style-type: none"> <li>1. Estimate Dissolved Oxygen in the given sample of water</li> <li>2. Estimate amount of Free CO<sub>2</sub> in the given sample of water</li> <li>3. Estimate amount of Hardness in the given sample of water</li> <li>4. Estimate amount of silicates in the given sample of water</li> <li>5. Estimate BOD of given sample of water</li> <li>6. Demonstration of flame Photometer: Potassium or Sodium</li> <li>7. Study of Various Air Pollution Control Devices: Catalytic converter, Gravity settling chamber, Electrostatic precipitators and Fabric filters.</li> <li>8. Study of safety symbols</li> <li>9. Study of Personal Protective Equipment and Non Respiratory Personal Protective Equipments.</li> <li>10. Identification of type of panic disorder and mood disorder and treatment plan</li> <li>11. Case studies regarding abnormality.</li> <li>12. Application of major theories of counseling in a counseling set up.</li> </ol>			

Course Code	Course Title and Contents	Lectures	Credit Points
<b>BNBUSHS6P2</b>	<b>PRACTICAL-II</b> <b>BASED ON BNBUSHS6P3 and</b> <b>BNBUSHS6P4</b>	<b>03 / Week</b>	<b>02</b>

1. TLC method for differentiation of ink, drugs
2. Microscopic examination of
  - a. Hair
  - b. Fibre
  - c. Pollen
3. Study of analytical instruments in crime investigation
  - a. HPLC
  - b. GC-MS
  - c. UV-visible Spectrophotometer
  - d. TLC
  - e. Electrophoresis ( Horizontal/ Vertical)
4. Preliminary and Confirmatory test for biological samples ( Blood, Urine, Saliva)
5. Collection and identification of fingerprint patterns.
6. Formulating a recipe . Indian Menu, Continental Menu, Oriental Menu.
7. Study of preparation and presentation of : soups, snacks
8. Study of Preparation and Presentation of : Sandwiches, Salads, Mocktails.
9. Napkin folding
10. Measure the density of milk using a lactometer.
11. Identification of types of exercises; (Bench press, Jumps, Push ups, Sit and Reach Test); fitness Muscle strength, endurance and flexibility exercises.
12. Suitable exercise programme for special conditions Weight reduction and Weight Management
13. Suitable Exercise programme for therapeutic conditions-CVD/ Diabetes /Arthritis.
14. Case Analysis from theory and investigative point of view – Nithari Killings, Arushi murder case, Nirbhaya case.

**PRACTICAL EXAMINATION**  
**T.Y.B.Sc. Semester- IV**

**AC**

Code :BNBUSHS6P1

**Duration: 3 Hrs**

**Total Marks : 100**

<b>Q. I</b>	Major Experiment	<b>30 Marks</b>
	Estimate the amount of Dissolved Oxygen / BOD in the given sample of water	
	<b>OR</b>	
	Estimate the amount of Free CO <sub>2</sub> and Total Hardness from the given sample of water	
	<b>OR</b>	
	Estimate amount silicates in water sample.	
<b>Q. II</b>	Minor Experiment	<b>20 Marks</b>
	Two case studies on clinical psychology	
<b>Q. III</b>	Identify and describe three from each group	<b>30 Marks</b>
	a. Safety symbols	
	b. Pollution devices ( 3 from each group)	
<b>Q. IV</b>	<b>Viva Voce</b>	<b>10 Marks</b>
<b>Q. V</b>	<b>Journal</b>	<b>10 Marks</b>

**PRACTICAL EXAMINATION**  
**T. Y. B. Sc. Semester- IV**

**AC**

**Code:BNBUSHS6P2**

**Duration: 3 Hrs**

**Total Marks: 100**

<b>Q. I</b>	<b>Major experiment</b>	<b>30 Marks</b>
	TLC method for differentiation of ink, drugs	
	<b>OR</b>	
	Mounting for Microscopic examination of	
	Hair and Pollen Hair and Fibre	
	<b>OR</b>	
	Preliminary and confirmatory tests for biological samples.	
<b>Q. II</b>	<b>Minor experiment</b>	<b>20 Marks</b>
	1. Napkin Folding	
	<b>OR</b>	
	2. Finger print analysis.	
<b>Q. III</b>	Identify and describe	<b>30 Marks</b>
	a. Instruments in crime investigation. b. Identification of types of exercises. c. Identification of lactometer	
<b>Q. IV</b>	<b>Viva Voce</b>	<b>10 Marks</b>
<b>Q. V</b>	<b>Journal</b>	<b>10 Marks</b>

**PRACTICAL EXAMINATION**  
**T. Y. B. Sc. Semester- VI**  
**Code: BNBUSHS6P3**

**AC**  
**11/02/2016**

**Duration: 3 Hrs**

**Total Marks: 100**

Evaluation to be done during practical examination

<b>Q. I</b>	<b>Two case studies to be performed during examination</b>	<b>80</b>
	Marks distribution for each case study	
	1. Identifying the topic on which the case study is based Forensic science and Clinical psychology.	<b>15</b>
	2. Report submission, Presentation and Viva Voce	<b>25</b>
<b>Q. II</b>	Report of Excursion Field report/ Institutional visit/ Visit to rehabilitation centre	<b>20</b>

**Evaluation Scheme****AC****Internals**

Class test	Certification of Swayam / Open university UK/ NPTEL in concern course	Presentation of any topic related to the course	Attendance & Leadership qualities	Total
20	10	05	05	40

**Theory Examination : Suggested Format of Question paper****Duration : 2 Hours****Total Marks : 60**

- **All questions are compulsory**

\*\* ( 4 questions of 8 marks each / 8 questions of 4 marks can be asked with 50% options)

<b>Q.1</b>	A	Based on Unit I	<b>6</b>
		OR	
		Based on Unit I	
	B	Based on Unit I	<b>6</b>
		OR	
		Based on Unit I	
	C	Based on Unit I	<b>4</b>
		OR	
		Based on Unit I	
<b>Q.2</b>	A	Based on Unit II	<b>6</b>
		OR	
		Based on Unit II	
	B	Based on Unit II	<b>6</b>
		OR	
		Based on Unit II	
	C	Based on Unit II	<b>4</b>
		OR	
		Based on Unit II	
<b>Q.3</b>	A	Based on Unit III	<b>6</b>
		OR	
		Based on Unit III	
	B	Based on Unit III	<b>6</b>
		OR	
		Based on Unit III	
	C	Based on Unit III	<b>4</b>
		OR	
		Based on Unit III	
<b>Q. 4</b>	Answer <b>any two</b> of the following		<b>12</b>
	Questions based on Unit 1-2-3		



### Marks Distribution and Passing Criterion for Each Semester

Theory					Practical		
Course Code	Internal	Min marks for passing	Theory Examination	Min marks for passing	Course Code	Practical Examination	Min marks for passing
BNBUSHS5T1	40	16	60	24	BNBUSHS5P1	100	40
BNBUSHS5T2	40	16	60	24	BNBUSHS5P2	100	40
BNBUSHS5T3	40	16	60	24	BNBUSHS5P3	100	40
BNBUSHS5T4	40	16	60	24	----	----	----
BNBUSHS5T5	40	16	60	24	----	----	----

Theory					Practical		
Course Code	Internal	Min marks for passing	Theory Examination	Min marks for passing	Course Code	Practical Examination	Min marks for passing
BNBUSHS6T1	40	16	60	24	BNBUSHS6P1	100	40
BNBUSHS6T2	40	16	60	24	BNBUSHS6P2	100	40
BNBUSHS6T3	40	16	60	24	BNBUSHS6P3	100	40
BNBUSHS6T4	40	16	60	24	----	----	----
BNBUSHS6T5	40	16	60	24	----	----	----

