Academic Council Meeting No. and Date : 2 / April 30, 2021

Agenda Number : 4 **Resolution Number : 4.12 and 4.28**

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

Syllabus for

Programme : Bachelor of Science

Specific Programme : Human Science

[F.Y.B.Sc. (H.S.)]

Revised under Autonomy

From academic year 2021 - 2022

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- **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 total 120 (one hundred twenty) credits in six semesters.

Eligibility :
B. Sc. in "Human Science" Program is open to candidates who have passed H. SC. Examination in Arts or Science from Board of Maharashtra or its equivalent.

Duration : 3 years

Mode of Conduct :
Laboratory practicals / Offline lectures / Online lectures

Program specific Outcome

The of B.Sc. with 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, paleontology, 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, nutritionist and dietic, 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

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

F.Y.B.Sc. (H.S)

Structure of Programme

Course Code	Course Title	No. of lectures	Credits
BNBUSHS1T1	Introduction to Human Science	**45**	**4**
BNBUSHS1T2	Biodiversity and Ecosystems	**45**	**2**
BNBUSHS1T3	Human Anatomy and Physiology	**45**	**2**
BNBUSHS1T4	Society and Language	**45**	**4**
BNBUSHS1T5	Human Diversity and Habits	**45**	**2**
BNBUSHS1P1	Anthropology, Evolution, Anatomy & Nutrition	**30**	**2**
BNBUSHS1P2	Classification Plants & Animals, Pathology & Ecosystem	**30**	**2**
BNBUSHS1P3	Case studies, Tradition & Culture, Zoogeography	**30**	**2**
Total		**315**	**20**

CourseCode	Course Title	No. of lectures	Credits
BNBUSHS1T1	Introduction to Human Science:	**45**	**4**
BNBUSHS1T2	Biodiversity and Ecosystems	**45**	**2**
BNBUSHS1T3	Human Anatomy and Physiology	**45**	**2**
BNBUSHS1T4	Society and Language	**45**	**4**
BNBUSHS1T5	Human Diversity and Habits	**45**	**2**
BNBUSHS1P1	Anthropology,Evolution,Nutrition, plant and animal from Epoch,Human anatomy	**30**	**2**
BNBUSHS1P2	Sampling, study of plants, ecosystems and physiology of vertebrates	**30**	**2**
BNBUSHS1P3	Case Study	**30**	**2**
Total		**315**	**20**

Semester I

Course Code	Course Title	Credits	No. of lectures
BNBUSHS1T1	INTRODUCTION TO HUMAN SCIENCE	04	

Course Outcomes:

To understand the historical writing, to realize the relevance of human sciences in relation to ancient and modern sciences

- To appreciate the milestones in the history of Indian science
- To appreciate the contribution of Indian scientists
- To study the human evolution & evolutionary theories.
- To study basic concepts of paleontology

Unit I :	**History of Science and Theories of Human origin**: • Historiography, Milestones in the development of Science, definition and relevance • Ancient Indian Applied Science • Science during the Medieval India: Maturing in Science and Alchemy • History of Modern Life Sciences	**15**
Unit II :	**Origin of Life and Human Being** • Mythological approach: Ancient and medieval beliefs (Theories of Cosmozoic, big bang, spontaneous generation, Biogenesis) • Modern hypotheses of origin of life (Biological evolution, chemical and biochemical origin of life) • Biological evolution. • Origin of Human Being Theories of Human evolution and the geographical impact on the same.	**15**
Unit III :	**Paleo-anthropology/(Paleontology):** • Fossilization: Processes, types, tracing and records • Biostratigraphy: Concept of stage and zone • Micropaleontology: Microfossils, calcareous, phosphatic, siliceous and organic microfossils • Stromatolites: Morphology, fossil records and modern occurrence • Homologous and Analogous organ, Vestigial organs • Paleoecology and Paleobotany.	**15**

Course Code	Course Title	Credits	No. of lectures
BNBUSHS1T2	**Biodiversity and Ecosystems**	2	

Course Outcomes:

- To appreciate biodiversity in plants and animal kingdoms at the time of Human evolution.
- To understand the great diversity in animal kingdom, along with their systematic classification
- To understand the details of abiotic and biotic factors of community
- To study the plant- animal interactions within the ecosystem
- To understand the dynamics of ecosystems

Unit I :	**Kingdom Plantae:** Definitions, Broader classification with examples of each group Cryptogams • Thallophyte • Bryophyta • Pteridophyte Phanerogams • Gymnosperms • Angiosperms	**15**
Unit II :	**Kingdom Animalia:** Definition, Broader classification with examples of each group Phylum – Porifera Phylum – Coelenterata (Cnidaria) Phylum – Platyhelminthes Phylum – Aschelminthes (Nemotoda) Phylum – Annelida Phylum – Arthropoda Phylum – Mollusca Phylum – Echinodermata Phylum – Chordata	**15**
Unit III :	**Ecosystems**: • Types of Ecosystems Aquatic (Marine, estuarine, fresh water) Terrestrial, Desertine & Grassland • Abiotic factors • Biomass, Energy flow, Food Chain, Energy Pyramids	**15**

Course Code BNBUSHS1T3	Course Title Human Anatomy and Physiology	Credits 2	No. of lectures

Course Outcomes

- To study the insight into the complex nature of human body with understanding of it's structure
- To study the countless different systems that make up the human body
- To understand the functioning of different human organ systems
- To understand the structural framework of human body

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Unit I :	**. Study of Human Organ**: Cell, tissues and body fluid , Structure of Human organs • Heart • Lungs • Kidney • Liver • Endocrine glands • Sense organs	**15**
Unit II :	**Appendicular and Axial Skeleton, Movements**: • Axial skeleton and Appendicular skeleton. • Movement: structure of muscle, Physiology of muscle contraction	**15**
Unit III :	**Basic Physiology**: • Physiology of Nutrition. • Physiology of Respiration. • Physiology of Circulation. • Physiology of Excretion. • Reproduction and Immunology	**15**

Course Code BNBUSHS1T4	Course Title **Society and Language**	Credits 4	No. of lectures

Course Outcomes :

- To understand the origin and types of communication and language and to provide training in effective communication
- To trace the origin and evolution of society
- To help relate in social interactions of society
- To understand emergence, values and perspectives of different religions
- To understand the importance and meaning of social institutions

Unit I :	**Origin of Communication, language of words:** • Understanding human communication • What is communication? Its Process, effectiveness and Barriers • Brief history, evolution and the development of communication. • Evolution of languages • Development of Speech- From Non-verbal to verbal, Oral communication • Non-verbal communication: Body language, five senses of communication, gestures and relation with sound. • Mass Communication	**15**
Unit II :	**Social evolution, Social animal, Society formation:** • Early stone-age: A brief survey of Paleolithic, Mesolithic and Neolithic Chalcolithic culture • Early Iron-age culture: Megalithic culture • Brief history of world civilizations: Ancient, medieval and modern periods	**15**
Unit III :	. **Institutions of Society, Marriage, Family, Religions:** • Approaches: Social Cohesion and Social identification • Types of groups: Primary and Secondary. • Development, Dispersal and transformation of groups **Relationship in the society** • Friendship nature and functions. • Social Institutions: Marriage and Family (functions, types and changes) • Kinship (functions & basic terminology) **Religion** • Evolution of Religion and introduction to various religions • Development of various religious practices • Concept of Universal Religion	**15**

Course Code	Course Title	Credits	No. of lectures
BNBUSHST5	**HUMAN DIVERSITY**	2	

Course outcome:

- To explain the aspects of human diversity in relation to geographical differences, cultural differences and Environmental impacts.
- To understand zoogeography & distribution of fauna /flora.
- To study the lifestyle in the Ancient time.
- To understand tools making , agriculture and other inventions.
- To study basic applications of statistics by using environmental data.

Unit I :	**Human Diversity** • Geographical distribution of Races, realms • Impact of Climatic and Environmental conditions then existing	**15**
Unit II :	**Nutrition And Lifestyle** • Type of food available • Types of tools used, inventions like fire • Development from Hunters to Food gatherers and Farmers. • Traditional costumes • Traditional arts and crafts	**15**
Unit III :	**Analysis of Environmental Data:** Conceptual Foundations, Data Exploration , Screening & Adjustments • Purpose of data exploration, screening & adjustments • Common parameters and statistics i. Parameters and statistic ii. The “normal” distribution iii. Measures of central tendency, spread, non- normality • Single variable plots i. Empirical distribution function and cumulative distribution functions ii. Histogram iii. Box-and-whisker plot iv. Extreme values (“outliers”) • Measures of association • Plots of association • Scatter plot, Co-plot.	**15**

Course Code BNBUSHS1P1	Course Title Anthropology, Evolution, Anatomy & Nutrition	Credits 2	No. of lectures
1.	**Paleo-anthropology**		**3**
	Fossils :Identification of (Two from each group wherever available)		
	Cnidaria, Annelida, Arthropoda, Mollusca, Echinodermata		
	Lower Vertebrates, Pisces, Amphibia, Aves, Mammals		
	Lower plant groups, Gymnosperms, Angiosperms		
2.	**Evolution of Human**		**3**
	Identification ○ Different stages of evolution of man ○ Different tools used by man in pre- historic time ○ Gestures, use of opposable thumb		
	Identification of: Plants and Animals found during different time period (One from each epoch)		
3.	**Human Anatomy**		
	Identification of • Heart, Lung, Kidney, Eye • Bones of man (Appendicular and Axial skeleton) • Muscles of skull and eye		**3**
4.	**Nutrition**: • Different types of root and leafy vegetable eaten by man in pre-historic time		**3**
5.	Qualitative study of Amylase Activity		**3**
6.	Qualitative Test for carbohydrates, lipids, proteins		**3**
7.	Calorimetric estimation of proteins, in hens egg Folin-Lowry method		**3**
8.	Detection of adulterants in milk (Starch and Urea)		**3**
9.	Homologous and Analogous organs		**3**
10.	Vestigial organs		**3**

Course Code BNBUSHS1P2	Course Title Classification Plants & Animals, Pathology & Ecosystem	Credits 2	No. of lectures (3)
1	Data collection by using sampling techniques and its analysis by using statistical methods Based on environmental factors, flora and fauna		**3**
2	Kingdom plantae: algae, bryophytes, pteridophytes, Gymnosperms, Angiosperms, representatives sample only		**3**
3	Kingdom Animalia : Invertebrate -major phyla		**3**
4	Kingdom Animalia : Vertebrate -major classes representative only		**3**
5	Making Herbarium		**3**
6	Study of muscle fiber from chicken		**3**
7	Urine analysis for normal and abnormal constituents (Normal; Urea , Uric acid, Abnormal; Glucose, Albumin, Bile		**3**
8	Detection ammonia from fish / uric acid from bird excreta		**3**
9	Study of different types of ecosystems		**3**

Course Code BNBUSHST1P3	Course Title Case studies, Tradition & Culture , Zoogeography	Credits 2
1.	Family communication related case studies	**3**
2.	Environmental issues and movement related case studies	**3**
3.	Traditional costumes of India and world	**3**
4.	Traditional art and crafts	**3**
5.	Traditional food of India and world	**3**
6.	Study of different geographical races of Human	**3**
7.	Study different zoogeographical realms	**3**
8.	Excursion and field visits to biodiversity, ecosystems.	**3**

Semester II

Course Code BNBUSHS2T1	Course Title NEUROSCIENCES	Credits 4	No. of lectures
Course outcome: • **To comprehend the structure and functions of the human brain and the nervous system** • **To learn the development of human brain throughout the evolution** • **To understand of human intelligence and it's evolutionary basis** • **To study complex structure of nerves and their role.**			
Unit I :	**Evolution of Skull and Human Brain/Mind** • Evolution of brain in invertebrates • Evolution of brain in veterbrates • Evolution of skull in vetebrates • Evolutionary development related to human skull and brain • Intelligence dependent on brain size • Evolution of human intelligence (Hominidae,Homininae,Homo sapiens		**15**
Unit II :	**Peripheral and Autonomous Nervous System:** • T. S. of Spinal Cord • Reflex arc • Reflex action, Types of Reflex actions • Sympathetic nervous system • Parasympathetic nervous system		**15**
Unit III :	**Neurotransmitters and their role, Nerve impulse and transmission**: • Structure of neuron , mechanism of nerve impulse • Nerve transmission • Synapse • Neurotransmitters: Acetylcholine, Amino acids; (Glutamate Aspartate, GABA, Glycine) Purines (ATP) • Biogenic amines: Dopamine, Norepinephrine, Epinephrine, Serotonin, Histamine • Science of pain		**15**

Course Code BNBUSHS2T2	Course Title **FUNDAMENTALS OF PSYCHOLOGY**	Credits 2	No. of lectures
Course outcome : **To study the fundamentals of psychology and understanding classical perspectives of psychology** **To understand scientific methods to study psychology** **To understand different models of learning and related concepts** ➢ **To understand the innate and instinct- genetically hard wired behaviours** **To critically analyze the cognitive functioning of mind** **To understand and apply different concept of memory – attending, storing, retrieving**			
Unit I :	**Perspectives in Psychology:** • What is Psychology? Brief history of Psychology • Contemporary Psychology: The Biopsychosocial approach and Current Perspectives: 4. Neuroscience ii. Evolutionary Behaviour Genetics iii. Psychodynamic: Behavioural, Cognitive, Social-cultural • Research Methods in Psychology 4. Descriptive ii. Correlation iii. Experimental		**15**
Unit II :	**Instinct and Innate Behaviour**: • Instinct: Concepts of Instinct: Fixed Action Pattern, examples of Fixed Action Pattern, Significance of instincts. • Innate Behaviour: Concepts of innate behavior, Types of innate behaviour exhibited by plants and animals (orientation, irritability, motivation, tropism, taxes, nest building etc), Significance of innate behaviour. • Learning and learning theories: What is Learning? • Classical Conditioning: Learning by association, Pavlov's Experiments: the processes of acquisition, extinction, spontaneous recovery, generalization and discrimination, Applications of Classical Conditioning. • Operant conditioning: Learning from the consequences of your behavior, Skinner's experiments: shaping behavior, types of reinforcers, reinforcement schedules, punishment. • Applications of Operant Conditioning, Contrasting Classical and Operant condition. • Biology, Cognition and Learning: Biological Constraints on Conditioning • Limits on Classical Conditioning, Operant Conditioning, Cognitive processes and classical conditioning, Cognitive processes and operant conditioning		**15**
Unit III :	**Cognitive processes:** 4. **Consciousness and Attention** • The Biology of Consciousness, cognitive neuroscience • Dual Processing: The Two-Track Mind		**15**

	• Selective Attention: selective attention and accidents, selective inattention (inattentional blindness and change blindness) **2. Memory** • What is memory? Memory models • Building memories: Encoding and Automatic processing, Encoding and effortful processing • Memory Storage: Capacity and Location of Long Term Memories in the Brain: Explicit-Memory System and Implicit-Memory System • How emotions affect memory processing: the amygdala emotions and memory • How changes at the synapse level affect memory processing **3. Retrieval: getting information out** • Measures of retention • Retrieval cues • Forgetting: forgetting and the two-track mind, encoding failure, storage decay, retrieval failure: interference and motivated forgetting • Memory construction errors: misinformation and imagination effects, source amnesia, discerning true and false memories, children's eyewitness recall, repressed or constructed memories of abuse.	

Course Code BNBUSHS2T3	Course Title **HUMAN BEHAVIOR**	Credits 2	No. of lectures
Course outcome: □ **To understand and appreciate the self and role assumed with participation in groups** □ **To grasp the knowledge of indirect evidences of evolution** □ **To learn the evolution from a single ancestor of a number of descendants with adaptations** □ **To perceive the various aspects ofmammalian/ primate behaviour** □ **To understand psychological – cognitive development from different major perspectives**			
Unit I :	**Behavioral Ecology (comparative study of human behavior with types of mammals enlisted)** Monotremes Metatheria Eutherian Primate Behavioral Ecology **Adaptations** Adaptive radiations in mammals, Aquatic, Arboreal, Terrestrial, Desertine.		**15**
Unit II :	Theoretical Perspectives on Life span Development 1. Theoretical Perspectives on Life Span Development • Psychoanalytic: Sigmund Freud: Psychosexual Stages of Development, Erik Erikson: Psychosocial Stages of Development. • Humanistic: Abraham Maslow and Carl Rogers. • Cognitive: Jean Piaget: Cognitive Stages in Development, Albert Bandura: Cognitive Learning. • Bioecological: Urie Bronfenbrenner. • Sociocultural: Lev Vygotsky 2. Attachment theory: John Bowlby, Mary Ainsworth; Attachment theory and close relationships: Cindy Hazan and Philip Shaver 3. Moral development: Jean Piaget, Lawrence Kohlberg, Carol Gilligan.		**15**
Unit III :	Human Interactions : • What is Interaction Design • The process of Interaction Design • Conceptualizing Interaction • Cognitive Aspects • Social Interaction • Emotional Interaction • Interfaces		**15**

Course Code	Course Title	Credits	No. of lectures
BNBUSHS2T4	**GENETICS**	4	

Course outcome:

- **To understand the basic concepts of genetics, inheritance, sex determination and Counseling for inherent disorders, infertility.**
- **To learn the different mechanisms of sex determination in nature**
- **To understand the structure of genetic materials**
- **To gain knowledge about various inherent disorders**
- **To study the advances in the science for methods of sex determination and to treat infertility**

Unit I :	**Mendelian Inheritance, Genetic material and Chromosomal theory**: • Mendelian inheritance: Monohybrid and dihybrid ratio , dominance, co-dominance, autosomal (recessive and dominant inheritance), X-linked recessive and dominant inheritance , Y linked and Z linked • Genetic material: Nucleic acids structure of DNA &RNA • Chromosomal theory of inheritance • Maternal mitochondrial inheritance	**15**
Unit II :	**Sex determination, Chromosomal anomalies**: • Types of Sex determination • Chromosomal types of sex determination: Haploid, XX, XO, XX-XY, and ZZ- ZW. • Barr body in mammals • Chromosomal anomalies : Autosomal , sex chromosomal	**15**
Unit III :	**. Genetic counseling**: • Common hereditary disorders in a family • Disorder from consanguineous marriage • Test for sex determination , Amniocentesis • IVF technique	**15**

Course Code BNBUSHS2T5	Course Title **HEALTH AND NUTRITION**	Credits 2	No. of lectures
Course outcome: • 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 • To learn about various chronic disorders			
Unit I :	**Health and Nutrition:** • Basic food groups • Balanced diet and recommended dietary allowances • Under-nutrition and deficiency: Anemia, Vitamin A , Vitamin D, Iodine and other deficiency disorders • Mal-nutrition during pregnancy and lactation. Diet related chronic diseases namely overweight and obesity, cardiovascular disease, diabetes, osteoporosis, cancer		**15**
Unit II :	**Health and Life style:** • 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 • Stress management: Conditions of stress, types of stress, effects and symptoms, stress management techniques		**15**
Unit III :	**Pollution and Health:** • 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.		**15**

Practical

Course Code BNBUSHS2P1	Course Title Neuroscience & Genetics	Credits 2	No. of lectures
1	**Study skull of fish, amphibian, reptile, bird, mammal (comparative study)**		3
2.	Skull of man to trace the evolution		3
3	To study brain of fish, amphibian, reptile, mammal(comparative study)		3
4	To study brain of human, structure of neuron, T.S. of spinal cord, reflex arc, sympathetic and parasympathetic nervous system		3
5.	Mounting of Barr body		3
6	**Study karyotypes** • Normal (male and female) • Autosomal chromosomal anomalies; Downs syndrome, Edwards, syndrome, Patuas syndrome, cri du chat syndrome. • Sex chromosomal anomalies: Turner's syndrome ,Klinefelter's syndrome**.**		3
8	RNA estimation by Orcinol method		3
9	DNA estimation by Diphenylamine method		3

Course Code BNBUSHS2P2	Course Title Physiology , Nutrition & Computer applications	Credits 2	No. of lectures
1.	**Haemoglobinometer- operation and its use**		3
2	To estimate hemoglobin by Saheli's haemometer		3
3	To estimate protein from sprouted pulses by Folin- Lowry's method		3
4	• To study diseases related to Vitamin deficiency, Rickets, Pernicious anemia**,** Night blindness, scurvy, • To study diseases related to Iodine		3
5	Preparation of balanced diet chart		3
6	Recipes of quick, healthy breakfast Recipes of quick heat less dishes		3
7	Study of body mass index formula relating to weight and height		3
8	Study of Data Gathering techniques		3
9	Study of UML Diagrams		3
10	To study blood profile chart of various patients.		3

Course Code BNBUSHS2P3	Course Title Nutrition & Field visit	Credits 2	No. of lectures
1.	**To study nutritional fact of tinned /canned food(project)**		**3**
2.	To study nutritive value of fresh, tinned/ preserved food(project)		**3**
3	To study quality of milk by methylene blue reduction test		**3**
4	To study the cholesterol content from cattle milk samples /soy milk/ almond milk/ coconut milk		**3**
5.	To study the dentition in mammals and dental formula and compare with human dentition.		**3**
6.	To study skin disease in humans (Project)		**3**
7.	To study the IQ by formula(project)		**3**
8.	Visits to Geological centers/Museum to study fossils, artifacts		

Reference books

Course Code	Course Title
BNBUSHS1T1	INTRODUCTION TO HUMAN SCIENCE

Sr. No.	Title	Author/s	Publisher	Edition	Year
1	History of Medieval India	Satish Chandra	-	New Edition	2020
2	History Of Ancient India	J.P. Mittal	Atlantic	--	January 2014
3	Fossils	P.R.Yadav	Discovery publishing house New Delhi	-	2017
4	Understanding Paleontology-	P.R.Yadav	Discovery publishing house New Delhi		(2009)
5	Microfossils	Howard Armstrong and Martin Brasier	Blackwell Publishing	Second edition	2005
6	Biochemical Evolution: the Pursuit of Perfection	Athel Cornish-Bowden	Garland Science	-	22 May 2016.

Course Code	Course Title
BNBUSHS1T2	Biodiversity and Ecosystems

Sr. No.	Title	Author/s	Publisher	Edition	Year
1	Animal Diversity	B. N. Pandey	Tata McGraw-Hill	(Volume 1)	2012
2	Concept of ecology (environmental biology)	N.Arumugam	saras Publication	-	-
3	Environmental studies A textbook for Undergraduates	Dr. K. Mukkanti	S. Chand	First	2010
4	A new course in Botany for FYBSc Paper I & SYBSc Paper I	Patel, Golatkar, Sarangdhar	Sheth Publication	-	2014
5.	A new course in Zoology for FYBSc Paper I & SYBSc Paper I	Yeragi, Bhattacharya	Sheth Publication	-	2014

Course Code	Course Title
BNBUSHS1T3	Human Anatomy and Physiology

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Human physiology Volume I and II	C.C. Chaterjee.	CBS Publisher	10th Edition	2006
2.	Textbook of Anatomy and functional physiology	John Wiley & Sons Inc	Tortora	13th edition	2011
3.	Dorland's Medical Dictionary	Dorland	Sunders	32 nd edition	2011

Course Code	Course Title
BNBUSHS1T4	Society and Language

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Social Anthropology.New Delhi: Universal Book Stall,	Evans-Prichard, E.E.	Free Press Publications	1st	1951
2.	The Tapestry of Culture., New York: Random House.	Rosman & Rubel	Rowman & littlefield Publishers	9th edition	2009
3.	Sociology	Schaeffer and Lamm	McGraw Hill	6th	1999
4.	Effective Technical Communication	M.Ashraf Rizvi	Tata McGraw Hill	1st	2005
5.	Basic Communication Skills for Technology	Andrea J Rutherford	Pearson	2nd	2000

Course Code	Course Title
BNBUSHS1T5	HUMAN DIVERSITY

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	A text-book of zoogeography	Frank Evers Beddard	University of Michigan Library	-	1985
2.	Descriptive Statistics - FYBSc				2011

Course Code	Course Title
BNBUSHS2T1	NEUROSCIENCES

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Textbook of Anatomy and functional physiology by;	John Wiley & Sons Inc	Tortora	13th edition	2011
2.	Biology	Campbell, N.A. and Reece, J. B	Pearson Benjamin Cummings	8th	2008

Course Code	Course Title
BNBUSHS2T2	FUNDAMENTALS OF PSYCHOLOGY

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Introduction to Psychology: Gateways to Mind and Behaviour	Coon, D., & Mitterer, J. O. Wadsworth/Thomson	Learning Publications	11th	2012
2.	Psychology.(Indian sub-continent adaptation).	S. K. & Meyer, G. E.	Dorling Kindersley (India) pvt ltd..	-	2008

3.	Understanding Psychology.	Feldman, R.S.	New York: McGraw Hill publications	11th	2013
4.	Experience Psychology.	King, L.A.	New York: McGraw Hill publications.	2nd	2013
5.	Cognitive Psychology	Kathleen M. Galotti	SAGE	5th	2014

Course Code	Course Title
BNBUSHS2T3	HUMAN BEHAVIOR

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Introduction to Psychology: Gateways to Mind and Behaviour	Coon, D., & Mitterer, J. O. Wadsworth/Thomson	Learning Publications	11th	2012
2.	An introduction to behavioural ecology	John Krebs, Baron Krebs	-	-	-
3.	Development across the lifespan	Robert feldman	Pearson	7th	2015
4.	Interaction Design, Beyond Human Computer Interaction	Helen Sharp, Yvonne Rogers, Jennifer Preece	Wiley	5th Edition	2019

Course Code	Course Title
BNBUSHS2T4	GENETICS

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Cell Biology Genetics Molecular Biology Evolution & Ecology	Agarwal V. K. and Varma P.S.	S. Chand	1st	2004
2.	Genetics: A Molecular Approach	Russel P.; Benjamin/Cummings	Pearson	3rd	2013
3.	Cytology, Genetics and Molecular Genetics	B. N. Pandey	Tata McGraw-Hill	(Volume-2)	2012

Course Code	Course Title
BNBUSHS2T5	HEALTH AND NUTRITION

Sr. No.	Title	Author/s	Publisher	Edition	Year
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

Evaluation Scheme

Internals

Class Test / Certification of Swayam / NPTEL in concern course	Active Participation & Leadership qualities	Total
30	**10**	**40**

Theory Examination : Suggested Format of Question paper

Duration : 2 Hours **Total Marks : 60**

- **All questions are compulsory**

Q. 1	Answer ***any two*** of the following		**16**
	a	Based on Unit I	
	b	Based on Unit I	
	c	Based on Unit I	
	d	Based on Unit I	
Q. 2	Answer ***any two*** of the following		**16**
	a	Based on Unit II	
	b	Based on Unit II	
	c	Based on Unit II	
	d	Based on Unit II	
Q. 3	Answer ***any two*** of the following		**16**
	a	Based on Unit III	
	b	Based on Unit III	
	c	Based on Unit III	
	d	Based on Unit III	
Q. 4	Answer ***any two*** of the following		**12**
		Questions based on Unit 1-2-3	

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

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
BNBUSHS1T1	**40**	**16**	**60**	24	BNBUSHS1P1	**100**	**40**
BNBUSHS1T2	**40**	**16**	**60**	24	BNBUSHS1P2	**100**	**40**
BNBUSHS1T3	**40**	**16**	**60**	24	BNBUSHS1P3	**100**	**40**
BNBUSHS1T4	**40**	**16**	**60**	24	-----	**----**	**----**
BNBUSHS1T5	**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
BNBUSHS2T1	**40**	**16**	**60**	24	BNBUSHS2P1	**100**	**40**
BNBUSHS2T2	**40**	**16**	**60**	24	BNBUSHS2P2	**100**	**40**
BNBUSHS2T3	**40**	**16**	**60**	24	BNBUSHS2P3	**100**	**40**
BNBUSHS2T4	**40**	**16**	**60**	24	-----	**----**	**----**
BNBUSHS2T5	**40**	**16**	**60**	24	-----	**----**	**----**

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PRACTICAL EXAMINATION
F. Y. B. Sc. Semester- I
Code : BNBUSHS1P1

Duration: 3 Hrs Total Marks : 100

Q. I	Major Experiment	30 Marks
	Perform the experiment to demonstrate the Qualitative Activity of Amylase.	
	OR	
	Perform the experiment to demonstrate the Qualitative test for Carbohydrates, Lipids and Proteins	
Q.II	Minor Experiment	20 Marks
	Colorimetric estimation of protein in hen eggs – Biuret or Folin – Lowry method	
	OR	
	Detection of adulterants from milk (Starch / Urea).	
Q. III	Identify and describe two from each group	30 Mark
	a. Fossil b. Evolution of Human/Plants/ Animals c. Human Anatomy d.Homologous /Analogous organs e.Vestigial organ	
Q. IV	Viva Voce	10 Marks
Q. V	Journal	10 Marks

PRACTICAL EXAMINATION
F. Y. B. Sc. Semester- I
Code : BNBUSHS1P2

Duration: 3 Hrs **Total Marks : 100**

Q. I	Major Experiment	30 Marks
	Urine Analysis for normal constituents	
	OR	
	Urine Analysis for abnormal constituents	
	OR	
	Making of Herbarium	
	OR	
	Muscle fibre from Chicken flesh	
Q.II	Minor Experiment	20 Marks
	Two Problems to be solved from the given Data using – Statistical Methods	
Q. III	Identify and describe two from each group	30 Mark
	a. Kingdom Plantae b. Kingdom Animalia c. Types of Ecosystems	
Q. IV	Viva Voce	10 Marks
Q. V	Journal	10 Marks

PRACTICAL EXAMINATION
F. Y. B. Sc. Semester- I
Code : BNBUSHS1P3

Duration: 3 Hrs **Total Marks : 100**

Q. I	*Project to be given from the suggestive topic given in the syllabus at the beginning of the semester. Evaluation to be done during practical examination.	
	Marks distribution for project	
	1. Identification and outline of problem	10 Marks
	2. Data Collection	15 Marks
	3. Report submission	10 Marks
	4. Presentation and viva	15 Marks
Q.II	Two case studies to be performed during examination Marks distribution for each case study(Environmental Science and Psychology)	30 Marks
	1. Identifying the topic on which the case study is based and Analysis of Data 2. Report submission and Viva	
Q. III	Report of Excursion to study Biodiversity and Ecosystem and viva voce	20 Marks

PRACTICAL EXAMINATION
F. Y. B. Sc. Semester- II
Code : BNBUSHS2P1

Duration: 3 Hrs **Total Marks : 100**

Q. I	Major Experiment	30 Marks
	Mounting of Bar Body	
	OR	
	Study of normal Karyotypes	
	OR	
	DNA estimation by Orcinol method	
	RNA estimation by	
Q.II	Minor Experiment	20 Marks
	Identification of Autosomal chromosomal anomalies	
	OR	
	Identification of Sex chromosomal anomalies	
Q. III	Identify and describe two from each group	30 Mark
	a. Study skull of fish/ amphibian/reptile/ bird/ mammal **b.** Skull of man c. To study brain of fish/ amphibian/ reptile/ mammal d. Structure of neuron/ Spinal Cord e. Reflex arc/Sympathetic NS/ Parasympathetic NS	
Q. IV	Viva Voce	10 Marks
Q. V	Journal	10 Marks

PRACTICAL EXAMINATION

F. Y. B. Sc. Semester- II

Code : BNBUSHS2P2

Duration: 3 Hrs **Total Marks : 100**

Q. I	Major Experiment (Any Two of the following)	30 Marks
	a. Test for haemoglobinometer and its operation **b. Recipes for quick healthy breakfast** **c.** To estimate protein from sprouted pulses by Folin- Lowry's method d. Preparation of balanced diet chart	
Q.II	Minor Experiment (Any Two of the following)	20 Marks
	a. To estimate hemoglobin by Saheli's haemometer **b. Calculate BMI from given Chart** **c.** To study blood profile chart of various patients. d. Computer related practical	
Q.III	Identification (06 Specimens - 5 marks each)	30 Marks
	a. Vitamin deficiency/ Rickets, **b.** Pernicious anemia/ Night blindness/ scurvy, **c.** Iodine diseases **d. Comment on given BMI** **e. Comment on given BMI**	
Q. IV	Viva Voce	10 Marks
Q. V	Journal	10 Marks

PRACTICAL EXAMINATION

F. Y. B. Sc. Semester- II

Code : BNBUSHS2P3

Duration: 3 Hrs **Total Marks : 100**

Q. I	*Project to be given from the suggestive topic given in the syllabus at the beginning of the semester. Evaluation to be done during practical examination.	
	Marks distribution for project	
	1. Identification and outline of problem	10 Marks
	2. Data Collection	15 Marks
	3. Report submission	10 Marks
	4. Presentation and viva	15 Marks
Q.II	Minor Experiment (Any Two of the following)	30 Marks
	To study quality of milk by methylene blue reduction test	
	To study the cholesterol content from cattle milk samples /soy milk/ almond milk/ coconut milk	
	To study the dentition in mammals and dental formula and compare with human dentition.	
Q. III	Report of Excursion to study Biodiversity and Ecosystem and viva voce	20 Marks