Vidya Prasarak Mandal's

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

Syllabus for

Programme Code : BUHS
Programme : Bachelor of Science Specific Programme : Human Science

[F. Y.B.Sc.   Human Science]

Level 4.5
CHOICE BASED GRADING SYSTEM

Revised under NEP
From academic year 2023-2024

Preamble

☐ The basic thoughts and understanding in the programme of B.Sc. with Human Science is many or around 60 % students after their graduation leave higher education and opt for jobs. These jobs are in Government offices, Municipal Corporations, private companies or, in schools as teachers. They are absorbed as science graduates. Even when the students opt for management carriers they are considered as science graduates at entry level. Thus the specialization or the major subject does not have relevance unless the students want to pursue the carrier in the field of research or higher education.

☐ Among all higher studies Masters in management is a most preferred option because of availability of lucrative jobs. Among the specializations in management studies Human Resource Management is one among the preferred choice. When a person works in any office it is needed that the concerned understands the psychology of organization, the co-workers, the officers and also the customers.

☐ With all these requirements of job market University has decided to introduce the graduation course in Arts and science as B. A. /B. Sc. Human science. In this the topics considered are Origin of Human Science, Evolution of human being, Cultural evolution, Social evolution, Development of communication and language, Anthropology, Family culture, Organization culture, Management techniques and many more. The Bachelor's Degree B.A./B.Sc. Human Sciences is a three year (six semesters) innovative interdisciplinary programme that focuses on understanding the human being holistically from biological, psychological and social perspectives. It helps in comprehending the human being from birth to death with a whole gamut of perspectives from origin, ancient history, its evolution to modern times. It is an amalgamation of various disciplines of sciences namely psychology, sociology, anthropology, paleontology, neuroscience, genetics, home science and other allied spheres of knowledge. A learner with such a vast knowledge and understanding of Human Science will be fit to work in any industry/ Government offices/ Schools or any other place.

☐ A learner if wish to go for higher education he can opt for Masters in Psychology, Anthropology or Masters in Management.

Prof. Dr. V.D.Mnajramkar
Chairperson, Bos Human Science
VPM's B.N.Bandodkar College of Science (Autonomous), Than

PROGRAMME OUTCOMES (POs) OF BACHELOR OF SCIENCE (B.Sc.)

The Undergraduate Programmes of Science are intended to cater quality education and attain holistic development of learners through the following programme outcomes:

PO1 - Disciplinary Knowledge

Lay a strong foundation of conceptual learning in science. Instil ability to apply science in professional, social and personal life.

PO2 - Inculcation of Research Aptitude

Ignite spirit of inquiry, critical thinking, analytical skills and problem-solving approach which will help learners to grasp concepts related to research methodology and execute budding research ideas.

PO3 - Digital Literacy

Enhance ability to access, select and use a variety of relevant information e-resources for curricular, co-curricular and extracurricular learning processes.

PO4 - Sensitization towards Environment

Build a cohesive bond with nature by respecting natural resources, encouraging eco-friendly practices and creating awareness about sustainable development.

PO5 - Individuality and Teamwork

Encourage learners to work independently or in collaboration for achieving effective results through practical experiments, project work and research activities.

PO6 - Social and Ethical Awareness

Foster ethical principles which will help in developing rational thinking and becoming socially aware citizens. Build an attitude of unbiased, truthful actions and avoid unethical behaviour in all aspects of life.

Eligibility: 12th Science Pass

Duration: 3 years (Syllabus for Second Year semester I & II)

Mode of Conduct: Offline lectures/ Online lectures

Discipline/Subject: Human Science
Specific Programme: B.Sc. Human Science
Qualification Title: UG certificate

Discipline/Subject: Human Science

Program Specific outcomes

1.	Recall and explain core principles and theories from psychology, sociology, anthropology, neuroscience, and allied subjects, demonstrating foundational knowledge of human behavior and social systems.	L1
2.	Interpret and compare key concepts across disciplines such as genetics, home science, paleontology, and law to appreciate interdisciplinary connections and their real-world relevance.	L2
3.	Apply discipline-specific methods and analytical techniques to solve practical problems in health, community settings, and legal contexts using appropriate theories and tools.	L3

4.	Analyze complex human and societal phenomena by breaking down data, patterns, and case studies to critically evaluate evidence and underlying causes.	L4	
5.	Critically assess policies, research findings, and ethical implications within and across fields like law, neuroscience, and social sciences, justifying conclusions based on criteria.	L5	
6.	Design and propose innovative solutions, research projects, or interventions that integrate multidisciplinary knowledge to address societal challenges effectively.	L6	

Specific Programme: F.Y.B.Sc. (Human Science)

Assessment: Weightage for assessments (in percentage) For Major and Minor		
Type of Course	Formative Assessment / IA	Summative Assessment
Theory	40%	60%

Curriculum Structure for the Undergraduate degree
Programme F.Y.B.Sc Human Science

SEMESTER – I			
Course Code	**Major Course Title**	**No. of Lectures in hrs**	**Credits**
23BUHS1T01	Society and Languages	30	02
23BUHS1T02	Human Diversity & Ecosystems	30	02
23BUHS1P01	Practicals based on23BUHS1T01 and 23BUHS1T02	60	02
Course Code	**Minor Course Title**	**No. of Lectures in hrs**	**Credits**
23BUHS1T03	Biodiversity	30	02
23BUHS1T04	Human Anatomy and Physiology	30	02
23BUHS1P02	Practicals based on 23BUHS1T03 and 23BUHS1T04	60	02
	Total	120	06
Course Code	**Generic - Course Title**	**No. of Lectures in hrs**	**Credits**
23BUHS1T05	Evolution	30	02
	Total	30	02

Course Code	IKS Indian Knowledge System - Course Title	No. of Lectures in hrs	Credits
23BUIK1T04	History of Science and Theories of Human Evolution	30	02
	Total	30	02

Course Code	VESEC (Vocational Education Skill Enhancement Course) - Course Title	No. of Lectures in hrs	Credits
23BU1VSC05	Analysis of Environmental Data and Ecosystem	15	01
	PRACTICALS	30	01
	Total	45	02

	SEMESTER – II		
Course Code	**Major Course Title**	**No of Lectures in hrs**	**Credits**
23BUHS2T01	Fundamental of Psychology	30	02
23BUHS2T02	Cognitive development	30	02
23BUHS2P01	Practicals based on23BUHS2T01 and 23BUHS2T02	60	02
	Total	120	06
Course Code	**Minor Course Title**	**No. of Lectures in hrs**	**Credits**
23BUHS2T03	Neurosciences	30	02
23BUHS2T04	Genetics	30	02
23BUHS2P02	Practicals based on23BUHS2T03 and 23BUHS2T04	60	02
	Total	120	06
Course Code	**Generic Course Title**	**No. of Lectures in hrs**	**Credits**
23BUHS2T05	Evolution of brain & behavior	30	02
	Total	30	02
Course Code	**Indian Knowledge System (IKS) Course Title**	**No. of Lectures in hrs**	**Credits**
23BUIK2T04	Food habits of Ancient Indian civilization	30	02
	Total	30	02
Course Code	**VESEC (Vocational Education Skill Enhancement Course) - Course Title**	**No. of Lectures in hrs**	**Credits**
23BU2VSC02	Human Machine interface (HMI) and Genetic counseling	30	02
	Total	30	02

Semester - I

MAJOR COURSE CODE: 23BUHS1T01	(02 Credits)	No of lecture in Hrs. 30

Society and Languages

COURSE OUTCOME

Students will be wanted to learn OR on completion of this course, students will be able to learn:

CO1	Define communication & find out it's process, effectiveness & barrier	L1
CO2	Explain non- verbal communication & mass communication	L2
CO3	Identify the types of groups & relationship in the society	L3
CO4	Classify various religious practices	L2

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	0	0	0	0	0	3
CO 2	0	0	0	0	0	3
CO 3	0	0	0	0	0	3
CO 4	0	0	0	0	0	3

Unit	Description	No. of Hours.
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
II	**Institution of Society, Marriage, Family and Religion** 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

REFERENCES
23BUHS1T01

1.	Adler, R. B., Rodman, G., & du Pré, A. Understanding Human Communication. Oxford.
2.	Baran, S. J. Introduction to Mass Communication. McGraw-Hill.
3.	Giddens, A. Sociology. Polity Press.
4.	Haralambos, M., & Holborn, M. Sociology: Themes and Perspectives. HarperCollins.
5.	Hargie, O. Skilled Interpersonal Communication. Routledge.
6.	Wood, J. T. Communication in Our Lives. Cengage.
7.	Samovar, L. A., Porter, R. E. Intercultural Communication. Cengage.
8.	Kumar, K. Mass Communication in India. Jaico.
9.	Oommen, T. K. Sociology: An Introduction. Pearson.
10.	Rao, C. N. Shankar. Sociology: Principles of Sociology. S. Chand.

MAJOR COURSE CODE: 23BUHS1T02	(02 Credits)	No of lecture in Hrs. 30
Human Diversity & Ecosystems		
COURSE OUTCOME		
Students will be wanted to learn OR on completion of this course, students will be able to learn:		

CO1	Classify geographical distribution of races.(L2)	L2
CO2	Compare impact of climatic condition on races.(L2)	L2
CO3	Illustrate the different types of food, tools, costumes, art and crafts.(L2)	L2
CO4	How development from hunters to food gatherers and farmers occur.(L1)	L1

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	0	0	0	0	0	2
CO 2	0	0	0	0	0	2
CO 3	0	0	0	0	0	3
CO 4	0	0	0	0	0	2

Unit	Description	No. of Hours

	Geographical Distribution of Races: • Geographical distribution of Races • Impact of Climatic and Environmental conditions then existing on races	
I		15
II	**Nutrition and Life style of different Races:** • 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

REFERENCES	
23BUHS1T02	
1.	Ember, C. R., Ember, M., & Peregrine, P. Anthropology. Pearson.
2.	Haviland, W. A. Cultural Anthropology. Cengage.
3.	Kottak, C. P. Mirror for Humanity. McGraw-Hill.
4.	Park, K. Preventive and Social Medicine. Bhanot.
5.	Malinowski, B. Argonauts of the Western Pacific. Routledge.
6.	Moran, E. F. Human Adaptability. Westview Press.
7.	Harris, M. Cultural Materialism. AltaMira.

MAJOR COURSE CODE: 23BUHS1T03	(02 Credits)	No of lecture in Hrs. 30
Biodiversity		

COURSE OUTCOME	
Students will be wanted to learn OR on completion of this course, students will be able to learn:	
CO1 Summarize five Kingdom system of classification along with cryptogams. (L2)	L2
CO2 Recall Phenerogams (L1)	L1
CO3 List different members of Invertebrates(L1)	L1
CO4 Define characteristics of Chordata (L1)	L1

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	0	0	0	0	0
CO 2	3	0	0	0	0	0
CO 3	3	0	0	0	0	0

CO4	3	0	0	0	0	0

Unit	Description	No. of Hours.
I	**BIODIVERSITY AND ECOSYSTEM** **Kingdom Plantae :** • Definitions, Broader classification with examples of each group • Cryptogams • Thallophyta • Bryophyta • Pteridophyta • Phanerogams • Gymnosperms • Angiosperms	15
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

REFERENCES

23BUHS1T03

1.	Kotpal, R. L. Modern Textbook of Zoology. Rastogi.
2.	Verma, P. S., & Agarwal, V. K. Chordate Zoology. S. Chand.
3.	Ganguly, S., & Adhya, T. College Botany. New Central Book Agency.
4.	Odum, E. P. Fundamentals of Ecology. Cengage.
5.	Singh, G. Plant Systematics. CRC Press.
6.	Mayr, E. Principles of Systematic Zoology. McGraw-Hill.
7.	Raven, P. H., Evert, R. F. Biology of Plants. W.H. Freeman.

MAJOR COURSE CODE: 23BUHS1T04	(02 Credits)	No of lecture in Hrs. 30
Human Anatomy and Physiology		
COURSE OUTCOME		
Students will be wanted to learn OR on completion of this course, students will be able to learn:		
CO1	List anatomy of different human organs	L1
CO2	Illustrate human skeletal system	L2

CO3	Recall physiology of different life processes like excretion, Respiration, Nutrition & circulation		L1
CO4	Define physiology of reproduction, immunology & movement - locomotion		L1

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	0	0	0	0	0
CO 2	3	0	0	0	0	0
CO 3	3	0	0	0	0	0
CO4	3	0	0	0	0	0

Unit	Description	No. of Hours.
I	**Anatomy and Skeletal system :** • Cell, tissues and body fluid , • Structure of Human organs • Heart, Lungs, Kidney, Liver, Endocrine glands, Sense organs • Axial skeleton and appendicular skeleton.	15
II	**Physiology:** • Physiology of Nutrition • Physiology of Respiration • Physiology of Circulation • Physiology of Excretion • Reproduction and Immunology • Movement: structure of muscle, Physiology of muscle contraction	15

REFERENCES

23BUHS1T04

1.	Tortora, G. J., & Derrickson, B. Principles of Anatomy and Physiology. Wiley.
2.	Guyton, A. C., & Hall, J. Textbook of Medical Physiology. Elsevier.
3.	Ross & Pawlina. Histology. Wolters Kluwer.
4.	Chaurasia, B. D. Human Anatomy. CBS Publishers.
5.	Ganong, W. Review of Medical Physiology. McGraw-Hill.
6.	Sembulingam, K., & Sembulingam, P. Essentials of Medical Physiology. Jaypee.
7.	Snell, R. S. Clinical Anatomy. Lippincott.
8.	Singh, I. Textbook of Human Osteology. Jaypee.
9.	Martini, F. Human Anatomy. Pearson.
10.	Tortora, G. Introduction to the Human Body. Wiley.

MAJOR COURSE CODE: 23BUHS1P01	(02 Credits)	No of lecture in Hrs. 60
Practical based on 23BUHS1T01and 23BUHS1T02		

COURSE OUTCOME		
Students will be wanted to learn OR on completion of this course, students will be able to learn:		
CO 1	Compare traditional costumes of world & India (L2)	L2
CO 2	Identify races and traditional art and craft (L3)	L2
CO 3	List traditional food of world and India (L1)	L3
CO 4	Infer family related case studies (L2)	L6

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	0	0	0	0	0	2
CO 2	0	0	0	0	0	3
CO 3	0	0	0	0	0	2
CO 4	0	0	0	0	0	2

1.	Traditional costumes of India – North and South
2.	Traditional costumes of India – East and West
3.	Traditional costumes of World – Asia and Africa
4.	Traditional costumes of World – Europe
5.	Traditional costumes of World – North and South America
6.	Traditional Art and craft-India
7.	Traditional Art and craft-World
8.	Traditional food of India – North and South
9.	Traditional food of India – East and West
10.	Traditional food of World (Asian – pan Asian and middle eastern)
11.	Traditional food of World (Globally popular Cuisine – Mexican, Italian, French)
12.	Study of different Geographical races of Human
13.	Family communication related case studies
14.	Religious Pratices Observation
15.	Family Structure Mapping using a Genogram

REFERENCES	
23BUHS1P01	
1.	Murdock, G. P. Outline of Cultural Materials. Yale.
2.	Mead, M. Coming of Age in Samoa. Penguin.
3.	UNESCO. Cultural Diversity and Human Development.

4.	Rao, M. S. A. Social Change in India. Orient Blackswan.
5.	Kuppuswamy, B. Social Psychology. Konark.
6.	Singh, Y. Modernization of Indian Tradition. Rawat.
7.	Census of India – Ethnographic Reports.
8.	NCERT. Social Science Textbooks.
9.	Sharma, R. N. Research Methods in Social Sciences.
10.	Fieldwork Manuals in Anthropology (UGC).

MINOR COURSE CODE: 23BUHS1P02	(02 Credits)	No of lecture in Hrs. 60

Practical based on 23BUHS1T03and 23BUHS1T04

COURSE OUTCOME

Students will be wanted to learn OR on completion of this course, students will be able to learn:

CO 1	Determine quantitative study of amylase activity & protein estimation	L5
CO 2	Examine qualitative study of carbohydrates, proteins , fats & adulterants in milk	L4
CO 3	Show muscle fiber from chicken thigh	L2
CO 4	Analyze urine sample of mammals, pisces & aves for normal & abnormal constituents	L4

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	0	0	0	0	0
CO 2	3	0	0	0	0	0
CO 3	3	0	0	0	0	0
CO 4	3	0	0	0	0	0

1.	Qualitative study of Amylase Activity
2.	Qualitative Test for carbohydrates
3.	Qualitative Test for proteins
4.	Qualitative Test for fats
5.	Calorimetric estimation of proteins, in hens egg Folin-Lowry method
6.	Detection of adulterants in milk (Starch and Urea)
7.	Study of muscle fiber from chicken
8.	Urine analysis for normal and abnormal constituents (Normal; Urea , Uric acid, Abnormal; Glucose, Albumin, Bile
9.	Detection ammonia from fish / uric acid from bird excreta
10.	Study of safety symbols
11.	Study of RPE & PPE

12.	Study of Axial Skeleton
13.	Study of Appendicular Skeleton
14.	Mounting of Scales (Placoid & Cycloid/ Ctenoid) from fishes.
15.	Determination of blood glucose level by GOD and POD method

REFERENCES	
23BUHS1P02	
1.	Plummer, D. T. Practical Biochemistry. McGraw-Hill.
2.	Jayaraman, J. Laboratory Manual in Biochemistry. Wiley.
3.	Rana, S. V. S. Practical Biochemistry. Tata McGraw-Hill.
4.	Chatterjee, C. C. Human Physiology Practical. Medical Publishers.
5.	Sadasivam & Manickam. Biochemical Methods. New Age.
6.	Pearse, A. G. E. Histochemistry. Churchill Livingstone.
7.	WHO Laboratory Manuals.
8.	NCERT Biology Practical Manuals.
9.	APHA. Standard Methods of Analysis.
10.	UGC Model Curriculum – Biology Practicals.

	Generic	**Credits 02**
Course code 23BUHS1T05:	**Course title - ** **Evolution**	**No of lectures in hrs 30**

COURSE OUTCOME		
Students will be wanted to learn OR on completion of this course, students will be able to learn:		
CO 1	Infer mythological, medieval beliefs & human evolution theories	L2
CO 2	Relate biological, chemical & biochemical evolution along with its impact on geography	L2
CO 3	Name the different types of fossils?	L1
CO 4	Explain biostratigraphy & some evidences of evolution	L2

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No Mapping						
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**
CO 1	3	0	0	0	0	0
CO 2	3	0	0	0	0	0
CO 3	2	0	0	0	0	0
CO 4	2	0	0	0	0	0

	Course: Generic – I	
Unit I	**Origin of Life**	**No. of Lectures**
I	• 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**
II	**Paleoanthropology** • 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, Vestigeal organs • Paleoecology and Paleobotany	**15**

	REFERENCES
23BUHS1T05	
1.	Futuyma, D. J. Evolution. Sinauer.
2.	Darwin, C. The Origin of Species. Penguin.
3.	Strickberger, M. Evolution. Jones & Bartlett.
4.	Ridley, M. Evolution. Blackwell.
5.	Simpson, G. G. The Meaning of Evolution. Yale.
6.	Raup & Stanley. Principles of Paleontology. Freeman.
7.	Kumar, H. D. Organic Evolution. S. Chand.

	INDIAN KNOWLEDGE SYSTEM	Credits 02
Course code 23BUIK1T04:	**Course title -History of Science and Theories of Human Evolution**	**No of lectures in hrs 30**

COURSE OUTCOME

Students will be wanted to learn OR on completion of this course, students will be able to learn:

CO 1	Define historiography & milestones in development of science	L1
CO 2	Relate ancient, medieval & modern history of science	L2
CO 3	Compare stone age & iron age	L2
CO 4	Summarize the history of world civilization	L2

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	0	0	0	0	0	2
CO 2	0	0	0	0	0	2
CO 3	0	0	0	0	0	3
CO 4	0	0	0	0	0	3

	Course: IKS	
Unit I	**History of Science and Theories of Human Evolution**	**No. of Lectures**

I	• 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
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

REFERENCES	
23BUIK1T04	
1.	Basham, A. L. The Wonder That Was India. Rupa.
2.	Subbarayappa, B. V. History of Science in India. Indian National Science Academy.
3.	Needham, J. Science and Civilization. Cambridge.
4.	Kosambi, D. D. The Culture and Civilization of Ancient India. Vikas.
5.	Singh, Upinder. A History of Ancient India. Penguin.
6.	Thapar, R. Early India. Penguin.
7.	Altekar, A. S. Education in Ancient India. Motilal Banarsidass.

	VESEC (Vocational Education Skill	**Credits 02**

		Enhancement Course)			
Course code 23BU1VSC05		**Course title - Analysis of environmental data**		**No of lectures in hrs 45**	

COURSE OUTCOME

Students will be wanted to learn OR on completion of this course, students will be able to learn:

CO 1	Interpret different environmental data by using statistics	L2
CO 2	What are the different types of ecosystems	L2
CO 3	Solve problems by using different statistical tests	L3
CO 4	Identify different types of ecosystem.	L3

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	0	3	0	0	0	0
CO 2	0	0	0	3	0	0
CO 3	0	0	0	0	0	0
CO 4	0	3	0	3	0	0

	Course: VESEC	
Unit I	**Analysis of Environmental Data**	**No. of Lectures**
I	- 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

	VESEC Practical	
1.	Data collection by using sampling techniques and its analysis by using statistical methods Based on environmental factors, flora and fauna	
2.	Problems based upon Z- test	
3.	Problem based upon t-test	
4.	Problems based upon chi square test	
5.	Study of aquatic ecosystems	
6.	Study of terrestrial ecosystems	

7.	Determination of Chlorophyll content from given sample
8.	Quantitative measurement of plankton in fresh & marine water
9.	Field visit related biodiversity & ecosystem (2 visits)

REFERENCES	
23BU1VSC05	
1.	Zar, J. H. Biostatistical Analysis. Pearkton.
2.	Sokal & Rohlf. Biometry. Freeman.
3.	Krebs, C. J. Ecology. Pearson.
4.	Ott & Longnecker. Statistical Methods. Cengage.
5.	Chapman & Reiss. Ecology: Principles and Applications. Cambridge.
6.	Daniel, W. W. Biostatistics. Wiley.
7.	UNEP Environmental Data Manuals.

Semester - II

MAJOR COURSE CODE: 23BUHS2T01	(02 Credits)	No of lecture in Hrs. 30
Fundamental of Psychology		

COURSE OUTCOME		
Students will be wanted to learn OR on completion of this course, students will be able to learn:		
CO1	Classify psychology and brief history	L2
CO2	Explain its research methods	L2
CO3	Analyze instinct and innate behaviour	L3
CO4	Discover classical and operant conditioning	L4

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	0	0	0	0	0
CO 2	0	3	0	0	0	0
CO 3	3	0	0	0	0	0
CO4	3	0	0	0	0	0

Unit	Description	No. of Hours.
I	**Perspective in Psychology:** • What is Psychology? Brief history of Psychology • Contemporary Psychology: The Biopsychosocial approach and Current Perspectives: • i. Neuroscience • ii.Evolutionary Behavior Genetics • iii.Psychodynamic: Behavioral, Cognitive, Social-cultural • Research Methods in Psychology • i. Descriptive • ii.Correlation • iii.Experimental	15
II	**Instinct and Innate Behavior** • Instinct: Concepts of Instinct: Fixed Action Pattern, examples of Fixed Action Pattern, Significance of instincts. • Innate Behavior: Concepts of innate behavior, Types of innate behavior exhibited by plants and animals (orientation, irritability, motivation, tropism, taxes, nest building etc.), Significance of innate behavior. • 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	15

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

REFERENCES	
23BUHS2T01	
1.	Morgan, C. T., & King, R. Introduction to Psychology. McGraw-Hill.
2.	Baron, R. A. Psychology. Pearson.
3.	Atkinson & Hilgard. Introduction to Psychology. Cengage.
4.	Ciccarelli & White. Psychology. Pearson.
5.	Carlson & Birkett. Physiology of Behavior. Pearson.
6.	Goldstein, E. Sensation and Perception. Cengage.
7.	Kuppuswamy, B. Elements of Psychology. Konark.
8.	Passer & Smith. Psychology. McGraw-Hill.
9.	Bernstein et al. Psychology. Cengage.
10.	NCERT Psychology Textbooks.

MAJOR COURSE CODE: 23BUHS2T02	(02 Credits)	No of lecture in Hrs. 30
Cognitive Development		
COURSE OUTCOME		

Students will be wanted to learn OR on completion of this course, students will be able to learn:

CO1	Define cognitive process (L1)	L1
CO2	Explain consciousness and attention, memory and retrieval (L2)	L2
CO3	Discover theoretical perspective on life span development.(L4)	L4
CO4	Measure all psychoanalytic stages (L5)	L5

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	2	0	0	0	0	0
CO 2	2	0	0	0	0	0
CO 3	2	0	0	0	0	0
CO 4	2	0	0	0	0	0

Unit	Description	No. of Hours
I	**Cognitive processes** **1.Consciousness and Attention** • The Biology of Consciousness, cognitive neuroscience • Dual Processing: The Two-Track Mind • 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	15
II	**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. •Bio ecological: UrieBronfenbrenner. •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

REFERENCES	
23BUHS2T02	
1.	Santrock, J. W. Life-Span Development. McGraw-Hill.
2.	Piaget, J. The Psychology of Intelligence. Routledge.
3.	Vygotsky, L. Mind in Society. Harvard.
4.	Freud, S. Introductory Lectures on Psychoanalysis. Norton.
5.	Erikson, E. Childhood and Society. Norton.
6.	Bandura, A. Social Learning Theory. Prentice Hall.
7.	Kohlberg, L. Essays on Moral Development. Harper.
8.	Gilligan, C. In a Different Voice. Harvard.
9.	Berk, L. Development Through the Lifespan. Pearson.

10.	Shaffer & Kipp. Developmental Psychology. Cengage.

MAJOR COURSE CODE: 23BUHS2T03	(02 Credits)	No of lecture in Hrs. 30

Neurosciences

COURSE OUTCOME	
Students will be wanted to learn OR on completion of this course, students will be able to learn:	
CO1 Illustrate T.S. spinal cord, reflex arc, reflex action and its type	L2
CO2 Compare parasymphatetic and symphathetic nervous system	L2
CO3 Explain Structure, mechanism, transmission of neuron and science of pain	L2
CO4 List neurotransmitters and biogenic amines.	L1

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	2	0	0	0	0	0
CO 2	3	0	0	0	0	0
CO 3	3	0	0	0	0	0
CO 4	2	0	0	0	0	0

Unit	Description	No. of Hours.
I	**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
II	**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	

REFERENCES

23BUHS2T03	
1.	Kandel, E. R. Principles of Neural Science. McGraw-Hill.
2.	Carlson, N. R. Physiology of Behavior. Pearson.
3.	Ganong, W. Review of Medical Physiology. McGraw-Hill.
4.	Bear, Connors & Paradiso. Neuroscience. Lippincott.
5.	Guyton & Hall. Medical Physiology. Elsevier.
6.	Snell, R. S. Clinical Neuroanatomy. Lippincott.

7.	Purves et al. Neuroscience. Sinauer.
8.	Tortora. Principles of Anatomy and Physiology. Wiley.
9.	Nolte, J. The Human Brain. Mosby.
10.	Shepherd, G. Neurobiology. Oxford.

MAJOR COURSE CODE: 23BUHS2T04	(02 Credits)	No of lecture in Hrs. 30
Genetics		

COURSE OUTCOME	
Students will be wanted to learn OR on completion of this course, students will be able to learn:	
CO1 Classify Mendelian Inheritance and Chromosomal theory of inheritance	L1
CO2 Distinguish between DNA and RNA	L4
CO3 Recall different types of sex determination	L1
CO4 Summarize different types of chromosomal anomalies	L2

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	0	0	0	0	0
CO 2	3	0	0	0	0	0
CO 3	3	0	0	0	0	0
CO 4	3	0	0	0	0	0

Unit	Description	No. of Hours.
I	**Mendelian Inheritance, Genetic material and Chromosomal theory :** • Mendelian inheritance: Monohybrid and diybrid 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	15
II	**Sex determination, Chromosomal anomalies** • Types of Sex determination • Chromosomal types of sex determination: Haploid, XX-XO, XX-XY, and ZZ- ZW. • Chromosomal anomalies : Autosomal and sex chromosomal	15

REFERENCES	
23BUHS2T04	
1.	Strickberger, M. Genetics. Macmillan.
2.	Griffiths et al. Introduction to Genetic Analysis. Freeman.
3.	Pierce, B. A. Genetics: A Conceptual Approach. Freeman.
4.	Watson et al. Molecular Biology of the Gene. Pearson.

5.	Snustad & Simmons. Principles of Genetics. Wiley.
6.	Lewin, B. Genes. Oxford.
7.	Gardner et al. Principles of Genetics. Wiley.
8.	Verma & Agarwal. Genetics. S. Chand.
9.	Hartl & Jones. Genetics. Jones & Bartlett.
10.	Klug & Cummings. Concepts of Genetics. Pearson.

MAJOR COURSE CODE: 23BUHS2P01	(02 Credits)	No of lecture in Hrs. 60
Practical based on 23BUHS2T01and 23BUHS2T02		
COURSE OUTCOME		
Students will be wanted to learn OR on completion of this course, students will be able to learn:		

CO 1	Analyze nature of learning curves & problem solving (L4)	L4
CO 2	Illustrate serial position effect & cephalic index (L2)	L2
CO 3	Evaluate IQ by formula (L5)	L5
CO 4	Interview of psychologist working in different fields (L3)	L3

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	0	4	0	0	0	0
CO 2	2	0	0	0	0	0
CO 3	0	5	0	0	3	0
CO 4	0	0	0	0	0	0

1.	To study the IQ by formula(project)
2.	Nature of learning curves
3.	Serial position effect
4.	Cephalic index
5.	Problem Solving
6.	Milestones of child's development
7.	Interview of psychologists working in different fields
8.	Case study on Attention
9.	The 16 PF Test
10.	Fisher's Temperament Inventory
11.	Bell's Adjustment Inventory {BAI}
12.	Robson's Self-Concept Questionnaire {RSCQ}
13.	Multiple Intelligence Test {MIT}
14.	Eysenck's Personality Inventory {EPI}
15.	Relationship Attachment Style Test

REFERENCES	
23BUHS2P01	
1.	Anastasi & Urbina. Psychological Testing. Pearson.
2.	Kaplan & Saccuzzo. Psychological Testing. Cengage.
3.	Aiken, L. Psychological Testing. Pearson.
4.	Kuppuswamy, B. Manual of Psychological Experiments. Konark.
5.	Singh, A. K. Tests, Measurements and Research Methods. Bharati Bhawan.
6.	NCERT Psychology Lab Manuals.
7.	Wechsler, D. Intelligence Scale Manuals.
8.	Eysenck, H. J. Personality Inventories.
9.	Bell, H. Adjustment Inventory Manual.
10.	APA Testing Guidelines.

MINOR COURSE CODE: 23BUHS2P02	(02 Credits)	No of lecture in Hrs. 60

Practical based on 23BUHS2T03and 23BUHS2T04

COURSE OUTCOME

Students will be wanted to learn OR on completion of this course, students will be able to learn:

CO 1	Recall human brain, neuron, spinal cord, reflex arc, SNS & PNS	L1
CO 2	Interpret barr body & karyotype	L2
CO 3	Estimate DNA & RNA	L5
CO 4	Demonstrate uses of hemoglobinometer	L2

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	0	0	0	0	0
CO 2	2	0	0	0	0	0
CO 3	5	0	0	0	0	0
CO 4	2	0	0	0	0	0

1.	To study Brain of Human, Structure of Neuron, T.S. of Spinal cord, Reflex arc, Sympathetic and Parasympathetic nervous system.
2.	Study of Karyotypes- Normal male & female
3.	Study of Barr Bodies
4.	Extraction & qualitative estimation of RNA
5.	Extraction & qualitative estimation of DNA
6.	Haemoglobinometer- operation and its use
7.	DNA Fingerprinting Simulation
8.	Study of polytene chromosome
9.	Preparation of stained squash of onion root tip for the study of mitosis

10.	Study of meiotic stages from flower buds
11.	Study of instruments used in genetics.
12.	Study of blotting techniques
13.	To study skull of vertebrates.
14.	To study brain of vertebrates.
15.	To study skull of man to trace the evolution.

REFERENCES	
23BUHS2P02	
1.	Snustad & Simmons. Principles of Genetics – Lab Manual. Wiley.
2.	Plummer, D. T. Practical Biochemistry. McGraw-Hill.
3.	Karp, G. Cell and Molecular Biology. Wiley.
4.	Singh, I. Human Anatomy Practical. Jaypee.
5.	WHO Laboratory Manuals.
6.	Jayaraman, J. Biochemical Techniques. Wiley.
7.	NCERT Biology Practical Manuals.
8.	Alberts et al. Molecular Biology of the Cell. Garland.
9.	UGC Model Practical Curriculum.
10.	Genetics Society of India Manuals.

	Generic	**Credits 02**
Course code 23BUHS2T05:	**Course title -** **Evolution of brain &behavior**	**No of lectures in hrs 30**
COURSE OUTCOME		
Students will be wanted to learn OR on completion of this course, students will be able to learn:		
CO 1	Relate the evolution of brain and skull in vertebrate and invertebrates	L2
CO 2	Infer evolution of human intelligence and relation with brain size	L2
CO 3	Compare behaviour of different groups of class Mammalia	L2

	CO 4	Illustrate adaptive radiations in mammals			L2

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	2	0	0	0	0	0
CO 2	2	0	0	0	0	0
CO 3	3	0	0	0	0	0
CO 4	3	0	0	0	0	0

	Course: Generic	
Unit I	**Evolution of Skull and Human Brain**	**No. of Lectures**
I	- 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**
II	**Behavioral Ecology** - Monotremes - Metatheria - Eutheria - Primate Behavioral Ecology Adaptations - Adaptive radiations in mammals, Aquatic, Arboreal, Terrestrial, Desertine	**15**

REFERENCES	
23BUHS2T05	
1.	Jerison, H. J. Evolution of the Brain. Academic Press.
2.	Striedter, G. Principles of Brain Evolution. Sinauer.
3.	Alcock, J. Animal Behavior. Sinauer.
4.	Krebs & Davies. Behavioral Ecology. Wiley.
5.	Fleagle, J. Primate Adaptation and Evolution. Academic Press.
6.	Tattersall, I. Human Evolution. Oxford.
7.	Darwin, C. The Descent of Man. Penguin.

INDIAN KNOWLEDGE SYSTEM		Credits 02
Course code 23BUIK2T04:	**Course title - Food habits of Ancient Indian Civilization**	**No of lectures in hrs 30**

COURSE OUTCOME

Students will be wanted to learn OR on completion of this course, students will be able to learn:

CO 1	Explain ancient Indian food habits	L2
CO 2	Compare the food habits in Vedic, Gupta and Mauryan period.	L2
CO 3	Recall the history of Ayurveda	L1
CO 4	List different branches of Ayurveda.	L1

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	0	0	0	0	0	2
CO 2	0	0	0	0	0	2
CO 3	3	0	0	0	0	0
CO 4	3	0	0	0	0	0

Course: IKS		
Unit I	**Food habits of Ancient Indian Civilization**	**No. of Lectures**
I	• Ancient Indian food • History of Indian food culture • Ancient Indian healthy food • Food habits in ancient India before the arrival of Aryans • Comparative study of food in Vedic, Maurya & Gupta period	**15**
II	**Ayurveda** • History of Ayurveda • Ayurvedic Pharmaceutics • Ayurvedic Dietetics • Ayurvedic cosmetology	**15**

REFERENCES

23BUIK2T04

1.	Achaya, K. T. Indian Food: A Historical Companion. Oxford.

2.	Sharma, P. V. History of Ayurveda. Chaukhamba.
3.	Basham, A. L. The Wonder That Was India. Rupa.
4.	Dwivedi, G. Ayurveda for Modern Living. Penguin.
5.	Lad, V. Ayurveda: Science of Self-Healing. Lotus Press.
6.	Thapar, R. Early India. Penguin.
7.	UNESCO Reports on Traditional Knowledge.

	VESEC (Vocational Education Skill Enhancement Course)	Credits 02
Course code 23BU2VSC02:	Course title - Human Machine interface (HMI) and Genetic counseling	No of lectures in hrs 45

COURSE OUTCOME

Students will be wanted to learn OR on completion of this course, students will be able to learn:

CO 1	Define HMI (L1)	L2
CO 2	Summarize common hereditary disorders in family (L2)	L2
CO 3	Explain history and evolution of digital age (L2)	L3
CO 4	List normal & abnormal karyotype (L1)	L3

Grading will be as 3: High(>60%), 2: Moderate(40%-60%), 1: Low(<40%), 0: No Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	0	3	0	0	0	0
CO 2	0	0	0	3	0	0
CO 3	0	0	0	0	0	0
CO 4	0	3	0	3	0	0

	Course: VESEC	
Unit I	**Human Machine interface (HMI) and Genetic counseling**	No. of Lectures

	Human Machine Interface (HMI)	
I	• Human Computer Interaction (HCI): What is HCI? Disciplines contributing to HCI, General principles of HCI design, Ergonomic aspects of HCI, New Areas of HCI • HMI related risks: workers health and safety • Brain-Computer Interface (BCI): Cognitive based neural prosthetics • 2.Communication technology and its impact • History and Evolution of the Digital Age and the Information Revolution. • Computer-Mediated Communication, Internet, One's place in Cyberspace? (Social networking), The Virtual Self. Gender, Sexuality, and Relationships on the Net. • Community, Culture, and Communication in Cyberspace. • Virtual Communities, Communication, and Culture in Virtual Communities. • Social Norms, Crime, and Punishment on the Electronic Frontier, Privacy and Surveillance in the Digital Age. • Producing, Regulating, and Protecting Information in Cyberspace, The Rest of the World and the Net. • Our future in the Technology era.	15

VESEC Practical	
1.	Study karyotype-Sex linked disorders
2.	Study of karyotypes-Autosomal chromosomal anomalies; Downs syndrome, Edwards, syndrome, Patuas syndrome, cri du chat syndrome
3.	Problems in genetics-Based on monohybrid and dihybrid corss
4.	Problems in genetics-Based on X-linked inheritance and multiple allels
5.	Pedigree chart analysis-Autosomal disorders
6.	Pedigree chart analysis- Sex linked disorders
7.	Field visit Report(Biodiversity visit ,Industrial visit and archeological site visit)
8.	HMI related practical
9.	HMI related practical
10.	HMI related practical

REFERENCES	

23BU2VSC02

1.	Dix et al. Human-Computer Interaction. Pearson.
2.	Preece, Rogers & Sharp. Interaction Design. Wiley.
3.	Nielsen, J. Usability Engineering. Morgan Kaufmann.
4.	Thompson & Thompson. Genetics in Medicine. Elsevier.
5.	Harper, P. Practical Genetic Counselling. CRC.
6.	ACM Guidelines on HCI.
7.	WHO Genetic Counseling Manuals.

VPM's B.N. Bandodkar College of Science (Autonomous), Thane
Curriculum Structure for the Undergraduate Degree Programme F.Y.B.Sc Human Science

Course Code	SEMESTER – I	Course imparts Employability (EM), Entrepreneurship (EN), Skill Development (SD)			Course integrates with Professional Ethics (PE), Gender Equity (GE), Human Value (HV), Environmental Sustainability (ES)			
Course Code	**Major Course Title**	EM	EN	SD	PE	GE	HV	ES
23BUHS1T01	Society and language	--	--	--	--	--	√	--
23BUHS1T02	Human diversity and Ecosystems	--	--	--	--	--	√	√
23BUHS1P01	Practical based on 23BUHS1T01 and 23BUHS1T02	--	--	--	--	--	√	--
23BU1VSC07	Analysis of environmental data and Ecosystem	√	--	--	--	--	--	√
	Minor Course Title							
23BUHS1T03	Biodiversity	--	--	--	--	--	--	√
23BUHS1T04	Human Anatomy and physiology	--	--	--	--	--	--	--
23BUHS1P02	Practical based on 23BUHS1T03 and 23BUHS1T04	√	--	√	--	--	--	--
Course Code	**Generic - Course Title**							
23BUHS1T05	Evolution	--	--	--	--	--	--	√
Optional Electives Semester 1 -Interdisciplinary Sciences								
23BUID1T01	**Soft skills and personality development-I (OE)**	--	--	√	√	–	–	--

	Semester 1 - (AEC)							
23BUEN1T01	**Basic English Learning course**	--	--	√	--	--	--	--
	Semester 1 - Indian Knowledge System							
23BUIK1T04	**Indian knowledge system**	--	--	--	--	√	√	--
16	*Total*	*03*		*03*	*01*	*01*	*04*	*04*

		SEMESTER – II	Course imparts Employability (EM), Entrepreneurship (EN), Skill Development (SD)			Course integrates with Professional Ethics (PE), Gender Equity (GE), Human Value (HV), Environmental Sustainability (ES)			
Course Code		**Major Course Title**	**EM**	**EN**	**SD**	**PE**	**GE**	**HV**	**ES**
23BUHS2T01		Fundamental of psychology	--	--	--	--	--	√	--
23BUHS2T02		Cognitive development	--	--	--	--	--	--	--
23BUHS2P01		Practical based on 23BUHS2T01 and 23BUHS2T02	--	--	--	--	--	--	--
23BU2VSC01		Human Machine Interface (HMI) and genetic counseling	√	--	√	--	--	--	--
		Minor Course Title							
23BUHS2T03		Neurosciences	--	--	--	--	--	--	--
23BUHS2T04		Genetics	--	--	--	--	--	--	--

Course Code	Course Title							
23BUHS2P02	Practical based on 23BUHS2T03 and 23BUHS2T04	√	--	√	--	--	--	--
Course Code	**Generic - Course Title**							
23BUHS2T05	Evolution of brain and behavior	--	--	--	--	--	--	√
Optional Electives Semester 2 -Interdisciplinary Sciences								
23BUID2T01	**Soft skills and personality development-II (OE)**	--	--	√	√	--	--	--
Semester 2 - (AEC)								
23BUEN2T01	**Basic English Learning course**	--	--	√	--	--	--	--
Semester 2 - Indian Knowledge System								
23BUIK2T04	Indian Knowledge System	--	--	--	--	--	--	√
10	*Total*	**02**	**00**	**04**	**01**	**00**	**01**	**02**

Prof. Dr. Vinda Manjramkar
BOS Chairman & In charge of Department of Human Science