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Vishwavidyanilaya Karyasoudha
Crawford Hall, Mysuru- 570 005

(Re-accredited by NAAC at 'A')

(NIRF-2022 Ranked 33 in University Category & 54 in Overall Category)

No.: PMEB-1/Spl./28(1)/2021-22

Date: 03-11-2022

Sub.: Syllabus and Examination pattern of **PG Diploma in Andrology and Clinical Embryology** and **Diploma in Yogic Science** Courses under Specialized Programmes from the academic year 2022-23-reg.

- Ref.: 1. Decision of the BOS Meeting held on 02-06-2022.
2. Decision of the Faculty of Science & Technology meeting held on 15-09-2022.
3. Decision of the Academic Council meeting held on 23-09-2022.

The Board of Studies in **Assisted Reproductive Technology and Embryology (PG)** at its meeting held on 02-06-2022 has recommended to approve the Syllabus of **PG Diploma in Andrology and Clinical Embryology** and **Diploma in Yogic Science** courses in University of Mysore under specialized/specified programs from the academic year 2022-23.

The Faculty of Science & Technology and the Academic Council at their meetings held on 15-09-2022 and 23-09-2022 respectively, have also approved the above said proposal and the same is hereby notified.

The syllabus of **PG Diploma in Andrology and Clinical Embryology** and **Diploma in Yogic Science** courses may be downloaded from the University website <https://uni-mysore.ac.in/PMEB/>.

REGISTRAR

University of Mysore

MYSURU, 570 005

To;

1. The Registrar (Evaluation), University of Mysore, Mysuru.
2. The Dean, Faculty of Science & Technology, DoS in Earth Science, Manasagangothri, Mysuru.
3. Prof. S.S. Malini, DoS in Genetics and Genomics, Manasagangothri, Mysuru.
4. The Principal, International Institute for Assisted Reproductive Technology and Research Center, # 81-82, Near JSS Arts College, Nanjanagud Road, Mysuru.
5. The Deputy Registrar/ Superintendent, Examination Branch, UOM, Mysuru.
6. The PA to Vice-Chancellor/Registrar/Registrar (Evaluation), University of Mysore, Mysuru.
7. Office Copy.

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Proceedings of the meeting of the Board of Studies of International Institute for Assisted Reproductive Technology and Research Centre Mysore, on 2nd of June 2022 at 2.30pm. in the chambers of The chairperson, Department of Studies in Genetics and Genomics, University of Mysore, Manasagangotri, Mysuru-570006.

Members Present:

1. Dr. S.S.Malini (Chairperson)	<i>S.S. Malini 2/6/22</i>
2. Dr Shilpa C.V	<i>Shilpa</i>
3. Dr. M S Srinivas (Online)	
4. Dr Gopal Marate	<i>Gopal</i>
5. Dr. H.S Aparna	<i>Aparna, H.S.</i>
6. Dr. Ramachandra Kini	<i>Ramachandra Kini</i>
7. Dr Shubha Gopal	<i>Shubha</i>
8. Dr K P Guruprasad (Online)	

Member not present:

1. Dr Santhrupth H V

Chairperson extended a warm welcome to all the members of International Institute for Assisted Reproductive Technology and Research Centre Mysore. The subjects referred by the University (UOM letter UA2/20/2013-14 dated.27.04.2022) were discussed and resolved as follows.

Agenda: Modifications of Existing M.Sc Syllabus was discussed and suitable corrections were incorporated. Discussions on new syllabii i.e.

1. *M.Sc (ASSISTED REPRODUCTION & EMBRYOLOGY)*
2. PG Diploma in Andrology and Clinical Embryology
3. Diploma In Yogic Science.

Members have observed some corrections in all the above syllabii and same was discussed and noted. The necessary changes will be submitted to the chairman before submitting to the university.

S.S. Malini
Dr. S.S.Malini
Chairperson

2/6/22



Programme 2

PG Diploma in Andrology and Clinical Embryology

Two Semester Choice Based Credit Based Scheme
&
Continuous Assessment of Grading Pattern System
(CBCS CAGP SYSTEM)

SYLLABUS

**International Institute for Assisted Reproductive Technology and
Research Centre (IIARTRC)**

#81 - 82 Nanjangud Road, Near JSS Arts College
Mysuru Karnataka India
2022-2023

Annexure -1

International Institute for Assisted Reproductive Technology and Research Centre (IIARTRC)

Specialized Programme by University Of Mysore CBCS CAGP Pattern (2022-2023)

PG Diploma in Andrology and Clinical Embryology

Regulation and Syllabus

Regulations

The credit pattern for PG Diploma in Andrology and Clinical Embryology is similar to the University's Choice based credit system. However, the syllabus does not have soft core and open elective Papers. All subjects are mandatory. The total credit for course is same as that of diploma programme of the University.

Following shall be the minimum and maximum credits per semester.

The credit pattern is lecture (L); Tutorial (T); Practical (P) ; (L: T: P) Pattern.

Lecture: One hour session of theory class per week in a semester is 1 credit.

Tutorial and practical: Two hour session of tutorial or practical per week in a semester is 1 credit.

One semester period: 16 weeks of teaching and learning.

Duration of semester: 20 weeks that includes semester end examinations.

- A Candidate can enrol for a minimum of 16 credits per semester and maximum of 20 credits per semester.
- A Candidate has to earn a minimum of 18 credits for successful completion of a Post Graduate Diploma.

C1 - Multiple Choice test 10 marks, Assignment 5 Marks

C2 - Test descriptive 10 marks, Topic presentation 5 Marks

Eligibility for admission: students of Bachelor of Science Degree from any UGC recognized Universities any life science master graduate , MBBS, M.Pharma, M.sc Nursing and MTech Engineering with sciences (biotechnology and life science related) Students from foreign national are also eligible

SEMESTER I**(20)CREDITS**

SL NO	CODE	TITLE OF THE PAPER	CREDIT PATTERN			TOTAL CREDITS
			L	T	P	
1		Human Reproductive Biology	4	0	0	4
2		<i>Reproductive Endocrinology and Genetics</i>	2	0	0	2
3		Andrology And Embryology Techniques	0	0	8	8
4		Cryobiology and Techniques	0	0	6	6
			4	0	16	20

SEMESTER II**(20)CREDITS**

SL NO	CODE	TITLE OF THE PAPER	CREDIT PATTERN			TOTAL CREDITS
			L	T	P	
1		<i>Human Gametes and Embryo culture System</i>	2	0	0	2
2		Quality control and risk management in ART	2	0	0	2
3		Micromanipulation in ART	0	0	8	8
4		<i>Presentation Skill and PROJECT WORK</i>	0	0	8	8
			4	0	16	20

PAPER 1.1 HUMAN REPRODUCTIVE BIOLOGY**(4 credits-4 Hours /Week)-64 Hours**

On successful completion of this course each student will be able to

- Understand the basics of cell structure and composition of prokaryotic and eukaryotic cell.
- Understand the importance of genetics in the field of infertility.
- Understand about cancer biology, properties of cell types of cancers, programmed cell death and molecular mechanism of apoptosis.
- Understand how to handle various sophisticated equipment in the IVF unit.

UNIT I. CELL BIOLOGY**16 HOURS**

Basic Characteristics of the Cell organelle: Diversity of cell size and shape, Cell theory, Structure, organization and composition of prokaryotic and eukaryotic cell. Plasma membrane chemical composition and structure of membrane and functions. Structure and functions of eukaryotic cell organelles.

Chromosomes- Types of Chromosomes and molecular anatomy of eukaryotic chromosomes, nucleosomes organization. Structure and significance of polytene and lamp brush chromosomes. Numerical changes in chromosomes.

Cell division :- Mitosis and meiosis. Significance of cell division. Cell cycle and cell cycle check points. Molecular regulation of cell cycle.

Cancer Biology: Properties of cell types of cancers, Cancer therapy, Programmed Cell death and Molecular mechanism of Apoptosis. Introduction to signal transduction.

UNIT II. BIOCHEMISTRY**8 HOURS**

Structures of atoms, molecules and bonds, chemical foundations of biology. Covalent and non-covalent interactions, Vander –Wall forces, electrostatic and Hydrogen bonding and hydrophobic interactions.

Classification, structure and Properties of carbohydrates, amino acids and proteins, and lipids. Nucleic acids- Structure and properties- Bases, Nucleosides, Nucleotides, Polynucleotide. Structure of double stranded DNA. Types of RNAs and their biological significance.

Spectroscopic techniques: Electromagnetic spectrum of light, Beer-Lambert's law, Principle and application of UV, Visible and UV spectrophotometer .

UNIT III. BIOPHYSICAL TECHNIQUES

8 HOURS

Introduction to Biophysics: Scope of Biophysics, Interaction of living and non-living matters, chemical foundations of Biophysics.

Microscopic Techniques: Principle and application of light, Phase contrast, Dark field, Fluorescence microscopy, Scanning and Transmission Electron Microscopy.

Centrifugation Technique: Principle, techniques of analytical and ultracentrifuges.

Electrophoresis and Blotting Techniques: Principle and application of PAGE, SDS-PAGE, and Agarose gel, Southern, Northern and Western blotting techniques. ELISA and TUNNEL Assay

UNIT IV. REPRODUCTIVE BIOLOGY

16 HOURS

History and Introduction of gamete biology : Biomedical background of Bourn Hall Clinic. The Bourn Hall story. Gonadal changes from birth to puberty, Puberty and its timing, Environmental factors and puberty, Puberty and Psychological adjustment. Anatomy of male and female reproductive systems. Gamete biology: Spermatogenesis and oogenesis.

Andrology: Detailed Composition of seminal plasma.

Biomedical assay for accessory sex organ function: measurement of fructose and zinc in seminal plasma. Ultra structure of spermatozoa.

Male and female reproductive system: congenital or developmental disorders associated with primary testicular disorder, Klinefelter Syndrome, cryptorchism.

Varicocele, infection, Drug and radiation Sperm transport disorders. Poor semen parameters. Causes of female infertility: Failure to ovulate, Problem in menstrual cycle, infection, failure to mature egg properly, endometriosis. Primary ovary insufficiency, uterine anomaly and fibroid.

Female infertility: Disorders of female reproductive system, Fallopian tubal block, hydrosalpinx. Polycystic ovary syndrome (PCOS). Physiology of ovulation. Ovarian cycle, menstrual cycle. Ovulation and anovulation, ovarian stimulation protocol. Human early embryology development. Fertilization. Early Cleavage . Blastocyst. Implantation. Gastrulation and Placentation.

PAPER 1.2 : GENETICS & REPRODUCTIVE ENDOCRINOLOGY

(2 credits-4 Hours /Week)-32 Hours

On successful completion of this course each students will be able to

- Understand about fundamentals of genetics Mendelian Laws .
- Learn about sex linked inheritance in Human being.
- Understand Human endocrinology.
- Know about hormonal regulation of spermatogenesis and oogenesis.

UNIT 1

16 Hours

Introduction to Genetics: Mendel's Laws. Genotype, Phenotype, Mendelian inheritance pattern. Interaction of genes: Supplementary, complimentary, epistasis, polygenic and multiple alleles and lethal gene interactions with suitable examples.

Sex linked inheritance: Sex linked inheritance in man (Haemophilia and colour blindness). Y-linked genes.

Sex determination:- Chromosomal basis, Genic Balance theory, molecular sex determination in *Drosophila*, *C. elegans* and Humans.

Dosage compensation in human. Chromosomal variations, Chromosomal aberrations with examples.

Protein synthesis- Translation and transcription in prokaryotes, post transcriptional modification in Eukaryotes. Gene regulation: Lac Operon, Tryptophan Operon and Arabinose Operon regulation. Gene Mutation and Human genetic disorders.

Human genome Project: Introduction and applications.

UNIT 2

16 Hours

Human endocrinology: Hormones and their function, hypothalamic pituitary function, thyroid hormones and their role. Principles of hormone assay, various equipment to do hormone assay, Immuno assay. Hirsutism primary and secondary amenorrhea.

Male and female Reproductive Endocrinology. Hormonal regulation of spermatogenesis and ovarian cycle. Physiology of implantation, luteal phase defect.

Hormonal Disorders causing infertility: PCOS hyperprolactinemia, Thyroid Disorders.

PRACTICAL PAPER-1.3 ANDROLOGY AND EMBRYOLOGY TECHNIQUES

(8 credits-16hours/week) 16 weeks

On successful completion of this course each student will be able to

- Understand the basics of andrology laboratory setup.
- Understand various equipments role in carrying out semen examination and semen processing and other procedures.
- Understand how to assure a quality control in andrology laboratory
- Learn cryopreservation of semen sample and can establish human semen bank
- Perform various sperm functional tests
- Understand how to manage biological waste in IVF lab

Andrology Techniques

1. Handling of different types of Microscopes.
2. Gram staining technique using curd sample.
3. Measurements of microscopic materials using stage and ocular micrometry.
4. Setting up of an IUI Laboratory & Quality Control in the andrology laboratory.
5. Equipment and safety: Basic supplies needed in and andrology laboratory.
6. Potential biohazards in andrology laboratory, safety procedure.
7. Safety Procedure of laboratory Equipments, precautions when handling liquid nitrogen.
8. Brief Account of equipments: laminar air flow, various types of microscope, stereo zoom microscope, inverted microscope, Incubator used for IUI/dry bath, Centrifuge unit, Refrigerator, Makler chamber, Neuber chamber, sperm concentration .
9. Sperm preparation: Introduction, Choice of method, Efficiency of sperm separation from seminal plasma and infectious organism, simple washing procedure, Direct swim-up, Diffuse density gradient.
10. Preparation of HIV infected semen sample.
11. Semen cryopreservation protocol: standard procedure modified freezing protocols for poor semen samples, labeling of straws and record.
12. Sperm survival test.
13. Preparation of testicular and epididymal spermatozoa.
14. Preparation of retrograde ejaculation sample.
15. Antisperm antibody test.
16. Advanced types of sperm preparation for ART .
17. Biomedical waste Management.

Embryology Techniques:

On successful completion of this course each student will be able to

- Understand the important points to be considered when setting up of an IVF laboratory.
- Learn in detail the quality control in IVF laboratory and trouble shooting.
- Understand various culture systems like open and close culture systems widely used in all IVF units.
- Know how to grade the human embryo at various developmental stages.

- Understand the history of infertile couples by going through various details of patient medical record.
- Learn human gamete culture system, culture medium preparation and quality testing of the medium.
- Understand the various techniques like Oocyte screening, Insemination, dish preparation, assessment for fertilization and further development till embryo transfer.
- Know how to assess the pronuclear stage zygote and predict how the quality of embryo is going to be when it is cultured further in vitro.

1. Setting up of ART Unit with various facilities and a detailed Account on embryology laboratory and equipments.
2. Quality control, quality assurance and trouble shooting in IVF lab.
3. Equipments to control air quality in Embryology laboratory.
4. Good laboratory practice (GLP) .
5. Preparation of standard operation protocol for all procedures in the IVF laboratory.
6. Culture system: Open and close culture advantages and disadvantages.
7. Preparation for follicular fluid aspiration, culture medium disposables.
8. Insemination of processed sample, Conventional IVF.
9. Short term insemination and long term insemination, fertilization check, observation of fertilized Oocyte till Blastocyst development.
10. Cleavage stage embryo grading.
11. Blastocyst grading.
12. Blastocyst culture advantages and disadvantages.
13. Preparation for IVF procedure: Going through patient file to know about type of stimulation protocol, Gonadotrophins used.
14. Previous history of IVF, if patient underwent IVF elsewhere.
15. Culture Medium in ART: Media preparation for ART, detailed account of culture medium, sperm survival test, media preparation for intra uterine insemination (IUI) and IVF-ET.
16. Method of fertilization, number of good quality Oocyte, fertilization and number of embryos, and quality of embryos available.

17. Preparation for the IVF procedure: Medium aliquoting into sterile tube, Dish preparation for IVF and ICSI.
18. IVF witnessing.
19. Dish preparation for IVF: close and open culture system.
20. Sperm concentration calculation for IVF.
21. Insemination of IVF droplet with sperm and co-incubation.
22. Follicular fluid screening.
23. Identification of oocytes, washing and pre-incubation.
24. Assessment of Oocyte quality, IVF and fertilization check.
25. Pronucleus grading.
26. Fragmentation and grading the embryo,
27. Extraction of the Oocyte from the ovary(Slaughter house),

PRACTICAL PAPER-1.4 :CRYOBIOLOGY AND TECHNIQUES

(8 credits - 16 hours/week) 16 weeks

On successful completion of this course each student will be able to

- Know the history of gamete cryopreservation and present practice how to cryopreserve human gametes and embryos
- Understand legal and ethical aspects of gamete banking
- Carryout cryopreservation by slow freezing and vitrification method successfully
- Understand how to cryopreserve various materials like sperm, testicular tissue, ovarian tissue.
 1. History of gamete cryopreservation.
 2. Psychological and psychosocial issues surrounding sperm and egg banking.
 3. Legal and ethical aspects of gamete banking.
 4. Method of sperm retrieval and banking in cancer patients.
 5. Detailed Account of cryoprotectant for slow freezing and vitrification method.
 6. Dish preparation for freezing/vitrification.
 7. Dish preparation for thawing/warming.
 8. Advantages and disadvantages of slow freezing and vitrification method.
 9. Oocyte/Sperm vitrification.
 10. Cleavage stage embryo vitrification.
 11. Blastocyst collapse and vitrification.
 12. Trouble shooting in vitrification.
 13. Ovarian tissue cryopreservation: Harvesting ovary.
 14. Preparation and processing of ovarian cortex.
 15. Vitrification of ovarian cortex.
 16. Storage of vitrified ovarian cortex.
 17. Warming of ovarian cortex.
 18. Various equipments used for slow freezing.

PAPER 2.1 HUMAN GAMETE AND EMBRYO CULTURE SYSTEM**(2 Credits - 2 Hours/Week) - 32 Hours**

On successful completion of this course each student will be able to

- Know about historical backgrounds of gametes and embryo culture system.
- Understand utility of animal models for human embryo culture for media preparation.
- Learn more about medium used in embryo culture : single step and sequential medium.
- Maintain the proper air quality during embryo culture.

UNIT 1***16 Hours***

- **Historical background of gametes and embryo culture:** Introduction, Development of culture media, The physiology of embryo culture, The maintenance of temperature, Optimization and regulation of pH in blood, Beer, and Embryos, The regulation of cellular volume and Osmolarity, The effects of environmental pollution and infection, The development of embryology specific tools, Recent changes to the IVF dish.
- **Utility of animal models for Human embryo culture Media composition:** Introduction, Rodents, Domestic Species and Nonhuman Primates.
- **Culture medium:** History of Embryo culture media, Salts and osmolarity, energy source and Metabolism, Effect of Osmolarity on Embryo development. **Amino acids and cellular homeostasis:** Macromolecules and embryo growth. Antioxidant chelater and cellular function. pH and buffers.
- **Growth factors:** Biochemical stress on the embryo, growth factors and embryo development, expression of growth factors in the reproductive tract, receptor expression by pre implantation embryos, Embryo coculture.

UNIT 2***16 Hours***

- **Culture system:** Single step and sequential: introduction, Important components of culture media, Uses of single medium.
- **Embryo co-culture:** Introduction, prolonged culture time, Different technologies, co-culture and Blastocyst freezing,
- **Low-Oxygen Culture:** Introduction, Oxygen utilization, Production of reactive oxygen species, Harmful effects of ROS on cells, Protection against ROS, Low oxygen control of gene expression, Animal embryos developed in vitro at low versus high oxygen tension, Effect of oxygen concentration on animal in vitro maturation, Low versus high oxygen effect on human IVF outcome, Low oxygen during manipulation with oocytes and embryos, Minimal requirements for low oxygen culture.

- **Embryo density:** Introduction, embryo density and embryo culture in Invitro, increased embryo density and group culture, increased embryo density and individual embryo culture, dynamic embryo culture, static culture methods, good practices for preparing embryo culture dishes.
- **Air quality:** introduction, characterization and evaluation of air pollutants, the introduction of airborne contamination into the IVF laboratory. Airborne toxicant intrusion into the culture media, quantitative methods for studying airborne contamination, Designs for the control of airborne contamination, laboratory –specific air handling, VOC attenuation, culture system, general laboratory practices,
- **Culture system mineral oil overlay:** Introduction, types of oil, oil and contaminants, storage of oil, washing of oil,
- **Human embryo culture media comparison:** Introduction, facility requirements, reproductive medicine , facility requirements, IVF laboratory, methods, statistics,
- **Embryo culture and Epigenetics:** Introduction, embryo culture, epigenetic effects of embryo culture, epigenetic effects of culture media, epigenetic effects of serum, epigenetic effects of oxygen tension.

PAPER 2.2: QUALITY CONTROL AND RISK MANAGEMENT IN ART

(2 Credits - 2 Hours/Week) - 32 Hours

On successful completion of this course each student will be able to

- Understand about quality and quality management in ART laboratory.
- Know about regulation, licensing, accreditation and risk management in IVF laboratory.
- Learn about the parameters to run the successful laboratory.
- Understand about the third party reproduction and surrogacy bill.

UNIT 1

16 Hours

- Quality and quality management in ART laboratory.
- Regulation, licensing and accreditation.
- Risk and risk management in ART laboratory.
- Quality and risk management tool.
- Risk education/risk minimization.
- How do we manage risk, the benefit of risk management.
- Developing risk management programme.
- How are we doing bench marking.
- Human resources.

UNIT 2

16 Hours

- Parameters to run a successful laboratory.
- Mitochondrial replacement therapy in ART .
- Proteomics and Metabolomics.
- Indian Council of Medical Research (ICMR) guideline for ART unit, and regulation in assisted reproduction.
- Surrogacy Bill.
- *Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act.*
- Regulation and ethics in clinical practice .
- Gamete and embryo donation.
- Regulation of ART Bank.
- ART Guideline worldwide
- ICMR Guideline for ART in India.
- Third party reproduction.

- Ethics in ART.

PAPER 2.3: MICROMANIPULATION IN ART

(8 credits - 16 hours/week) 16 weeks

On successful completion of this course each student will be able to

- Understand the history and application of micro manipulation technique in ART.
- Know detailed account of various kinds of micro manipulation system.
- Learn how to align micro tool to handle human gametes.
- Understand how to carryout various advanced techniques using micromanipulator to improve the IVF success rate.

1. History of micromanipulation.
2. Various kinds of micromanipulation unit.
3. Detailed Account of all micro manipulation unit.
4. Micro tool preparation equipments.
5. Hands on practice of various micro manipulation unit.
6. Micro tool alignment.
7. Intra Cytoplasmic Sperm Injection (ICSI) dish preparation.
8. Brief Account on Poly Vinyl Pyrrolidone (PVP) and hyaluronidase.
9. Oocyte denudation.
10. Oocyte assessment.
11. Sperm immobilisation with various techniques.
12. Intra Cytoplasmic sperm injection.
13. Assisted hatching: Zona drilling, Zona thinning, Chemical and laser assisted hatching.
14. Intracytoplasmic morphologically selected Sperm Injection (IMSI).
15. Physiological selection of Sperm and intra Cytoplasmic sperm injection (PICSI).
16. Spindle view (Polo-scope).
17. Time lapse video monitoring of developing embryo.

PAPER 2.4: PRESENTATION SKILL AND PROJECT WORK (8 CREDITS)

Students will select the appropriate topics related to ART under the guidance of a teacher and prepare the power point presentation. Prepared PPT will be presented.

PROJECT WORK

Students pursuing PG Diploma in Andrology And Clinical Embryology course is required to carry out work on a selected research project under the guidance of the faculty. This is to train a student in research methods and techniques. Project work includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing research study, collection of data, data analysis and comparison of results and finally drawing conclusions.

The project should be written under the following headings

- Introduction.
- Aims of objective of the study.
- Review of literature.
- Material and Methods.
- Results.
- Discussion.
- Conclusion.
- Summary.
- Tables.
- Annexure.

Two copies of the project report have to be prepared and submitted to the department/university before the final examination date notified and it has to be evaluated by the examiners with project presentation and viva.

Scheme Of Examination - theory

C3 Total marks **70 marks**

Part-1 Short questions (1 to 12 numbers)

2x10 Questions (12 questions) **20 marks**

Answer any ten of the following

10x 2 Questions **20 Marks**

Write Long answer questions (21 to 24)

Answer any two of the following

Scheme of Examination- Practical

Reports – 40 marks

Viva- 30 marks

RECOMMENDED READING BOOKS

Sl.No	Name of The Book	Authors	Edition And Year
1	Andrology Laboratory Manual	Ashok Agarwal, Kamini A Rao, M S Srinivas.	2010
2	A Practical Guide To Selecting Gametes And Embryos	Markus Montag.	2014
3	A Practical Guide To Basic Laboratory Andrology	Christopher L R Barratt ,David Mortimer , Jose Antonio Castilla ,Juan G.Alvarez,Lars Bjorndahl.	2010
4	A Workbook On Human Spermatozoa And Assisted Conception	Ashok Agarwal , Sonia Malik.	2012
5	Biennial Review Of Infertility	Bart C Fauser, Catherine Racowsky , Douglas T Carell, Peter N Schegel.	2013
6	Biochemistry	David Rawn, J.	1989
7	Biochemistry	Voet, D. And Voet, J.G.	1999
8	Biochemistry-The Chemical Reactions Of Living Cells- Vol-2.	David E. Metzle	1977
9	Biophysical Chemistry Part-2	Cantor And Schmmel.	1980
10	Biophysical Chemistry-Principles And Techniques.	Upadyaya And Upadyaya.	2003
11	Chemistry – An Introduction To General, Organic And Biological Chemistry.	Karen C. Timberlake	1999
12	Embryo Culture: Methods And Protocols,	Gary D Smith, Jason E. Swain, Thomas B.Pool.	2013

13	Embryo Transfer	Gautam N Allahbadia	2008
14	Handbook Of Human Oocyte Cryopreservation	Eleonora Porcu , Patrizia Maria Ciotti, Stefano Venturoli	2013
15	Harrisons Endocrinology	J Larry Jameson	2010
16	Harper's Review Of Biochemistry, , (1997)	Murray Et. Al.	1997
17	Human Assisted Reproductive Technology: Future Trends In Laboratory And Clinical Practice.	Botros R. M.B. Rizk ,David K Gardner , , Tommaso Flcone .	2011
18	Infertility Counseling-A Comprehensive Handbook For Clinicians.	Linda Hammer Burns, Sharon N Covington	2006
19	Lehninger : Principles Of Biochemistry	David L Nelson, Michael M Cox	2015
20	Male Infertility , 2 nd Edition ,	T B Hargreave .	1997
21	Medical Laboratory Technology Part-	S K. Mizanur Rahman.	2009
22	Molecular Biology Of The Cell.	Bruce Alberts	2002
23	Netters Atlas Of Human Embryology	Larry R Cochard	2002
24	Quality And Risk Management In The IVF Laboratory	David Mortimer And T. Mortimer	2008
25	Oocyte Biology In Fertility Preservation	S. Samuel Kim	2013
26	Sperm Banking –Theory And Practice	Allan A Pacey , Mathew J Tomlinson	2009
27	Textbook Of IUI And ART	Hrshikesh Pai,Kinjal R Shah, Nanditha Palshetkar ,Rishma Dhillon Pai.	2016
28	Text Book Of Biochemistry With Clinical Correlations.	Thomas Devlin	1999

29	Textbook Of In Vitro Fertilization And Assisted Reproduction :The Bourn Hall Guide To Clinical And Laboratory Practice.3 rd Edition	Peter R Brinsden	2005
30	The Sub fertility Handbook-A Clinicians Guide, 2 ND Edition ,	Gab Kovacs .	2011
31	Textbook Of Assisted Reproductive Technologies: Laboratory And Clinical Perspectives. 3 rd Edition	Ariel Weissman , Colin M Howeles , David K Gardner ,Zeev Shoham.	2009
32	Practical Manual Of In Vitro Fertilization.	Alex C. Varghese, Ashok Agarwal , Zsolt Peter Nagy	2013
33	Practical Biochemistry; Principles And Techniques;	K.Wilson And J. Walker (1995) 4 Th Edn.	1995
34	Preimplantation Genetic Diagnosis 2 nd Edition	Joyce Harper	2009

Annexure -1

International Institute for Assisted Reproductive Technology and Research Centre (IIARTRC)

Specialized Programme by University Of Mysore CBCS CAGP Pattern (2022-2023)

DIPLOMA IN YOGIC SCIENCE Regulation and Syllabus

Regulations

The credit pattern for **DIPLOMA IN YOGIC SCIENCE** is similar to the University's Choice based credit system. However, the syllabus does not have soft core and open elective Papers. All subjects are mandatory. The total credit for course is same as that of Certificate programme of the University.

Following shall be the minimum and maximum credits per semester.

The credit pattern is lecture (L); Tutorial (T); Practical (P) ; (L: T: P) Pattern.

Lecture: One hour session of theory class per week in a semester is 1 credit.

Tutorial and practical: Two hour session of tutorial or practical per week in a semester is 1 credit.

One semester period: 16 weeks of teaching and learning.

Duration of semester: 20 weeks that includes semester end examinations.

- A Candidate can enroll for a minimum of 16 credits per semester and maximum of 20 credits per semester.
- A Candidate has to earn a minimum of 32 credits for successful completion of a Diploma Programme.

C1 - Multiple Choice test 10 marks, Assignment 5 Marks

C2 - Test descriptive 10 marks, Topic presentation 5 Marks

Continuous assessment pattern:

Continuous assessment	Time duration	Marks		Minimum 30% and an aggregate of 40% to declare pass
		Max	Min	
C1	1 week to 8 weeks	15	4.5	
C2	9 weeks to 16 weeks	15	4.5	
C3	Complete 16 weeks	70	21	

Eligibility for Admission:

Eligibility for Admission: Students who have complete 2nd PUC in any stream and above from any recognized Board/Universities with any subjects , Students from foreign nationals are also Eligible subjected to eligibility from University of Mysore, Admission will be done as per University of Mysore norms.

PREAMBLE

Programme Objective: (DIPLOMA IN YOGIC SCIENCE)

The purpose of the Diploma in Yoga is to impart knowledge of yoga to graduates in order to enable them to teach yoga to the students in schools and colleges and to the interested public of all age groups.

To provide the necessary knowledge of the theory and practice of yoga so that the Students learn to practice and also to teach yoga to all age groups for promoting their Health and effectiveness.

To give them a basic understanding of Yoga and its nature, scope, Development of yoga through the ages, Different types of yoga like Karma Yoga, Bhakti Yoga, Jnana Yoga, Raja yoga, Hatha yoga and Mantra Yoga, Meditation and Its nature and scope, Different types of meditation, the concepts Hatha Yoga Pradipika and Gheranda Samhitha, Chakra theory and Kundalini yoga and relevance to the modern life.

To provide the necessary knowledge of human anatomy & physiology of Cell structure. systems in the body like Skeletal system, Muscular system, Digestive system, Circulatory system, Respiratory system, Excretory system, Endocrine system, Nervous system and Reproduction. Also knowledge about Nutrition and dietetics.

To provide the necessary knowledge of nature ,characteristics and development of Indian philosophy, Indian Philosophical systems like Vedic thought, Nyaya Philosophy, Vaisesika Philosophy ,Samkya Philosophy and Sankara philosophy.

To give them a basic understanding of Definition of psychology, Methods of psychological sciences like Introspection method, Observation method, Case study method and Observation method. To aware of Scope and substance of Indian Psychology, Cognitive process like Sensation, Perception, Attention, Memory, Language, Thinking, Concept formation and creativity, Extra sensory perception, Fundamentals of Attitudes, learning, motivation and emotion. And aware of Yoga Psychology and Definition& characteristics of Personality and Indian approaches to Personality.

To provide the necessary knowledge of Kriyas, Asanas, Mudras, Bandas, Pranayama and meditative postures.

Programme Outcomes:

The student can understand the knowledge about the theory and practice of Yoga and its nature, scope, Development of yoga through the ages, Different types of yoga like Karma Yoga, Bhakti Yoga, Jnana Yoga, Raja yoga, Hatha yoga and Mantra Yoga, Meditation and Its nature and scope, Different types of meditation, the concepts Hatha Yoga Pradipika and Gheranda Samhitha, Chakra theory and Kundalini yoga and relevance to the modern life.

The student can understand the knowledge of human anatomy & physiology of Cell structure. systems in the body like Skeletal system, Muscular system, Digestive system, Circulatory system, Respiratory system, Excretory system, Endocrine system, Nervous system and Reproduction. Also knowledge about Nutrition and dietetics.

The student can understand the knowledge of nature, characteristics and development of Indian philosophy, Indian Philosophical systems like Vedic thought, Nyaya Philosophy, Vaisesika Philosophy, Samkya Philosophy and Sankara philosophy.

The student can understand the knowledge of nature, characteristics and development of Indian philosophy, Indian Philosophical systems like Vedic thought, Nyaya Philosophy, Vaisesika Philosophy and Samkya Philosophy, The Patanjali Yoga Darsana and Mimamsa Darsana, Jainism, Buddhism, Sankara, Visistadvaita Vedanta of Ramanuja and Dvaita Vedanta of Madhvacharya.

The student can understand the knowledge of nature, characteristics and development of Indian philosophy, Indian Philosophical systems like Vedic thought, Nyaya Philosophy, Vaisesika Philosophy and Samkya Philosophy, The Patanjali Yoga Darsana and Mimamsa Darsana, Jainism, Buddhism, Sankara, Visistadvaita Vedanta of Ramanuja and Dvaita Vedanta of Madhvacharya. Fundamentals of Attitudes, learning, motivation and emotion. And aware of Yoga Psychology and Definition & characteristics of Personality and Indian approaches to Personality.

The student can understand the knowledge of knowledge of Kriyas, Asanas, Mudras, Bandas, Pranayama and meditative postures.

About Diploma in DIPLOMA IN YOGIC SCIENCE Programme

Programme Objective: (DIPLOMA IN YOGIC SCIENCE)

The purpose of the Diploma in Yoga is to impart knowledge of yoga to graduates in order to enable them to teach yoga to the students in schools and colleges and to the interested public of all age groups.

To provide the necessary knowledge of the theory and practice of yoga so that the Students learn to practice and also to teach yoga to all age groups for promoting their Health and effectiveness.

To give them a basic understanding of Yoga and its nature, scope, Development of yoga through the ages, Different types of yoga like Karma Yoga, Bhakti Yoga, Jnana Yoga, Raja yoga, Hatha yoga and Mantra Yoga, Meditation and Its nature and scope, Different types of meditation, the concepts Hatha Yoga Pradipika and Gheranda Samhitha, Chakra theory and Kundalini yoga and relevance to the modern life.

To provide the necessary knowledge of human anatomy & physiology of Cell structure. systems in the body like Skeletal system, Muscular system, Digestive system, Circulatory system, Respiratory system, Excretory system, Endocrine system, Nervous system and Reproduction. Also knowledge about Nutrition and dietetics.

To provide the necessary knowledge of nature ,characteristics and development of Indian philosophy, Indian Philosophical systems like Vedic thought, Nyaya Philosophy, Vaishesika Philosophy ,Samkya Philosophy and Sankara philosophy.

To give them a basic understanding of Definition of psychology, Methods of psychological sciences like Introspection method, Observation method, Case study method and Observation method. To aware of Scope and substance of Indian Psychology, Cognitive process like Sensation, Perception, Attention, Memory, Language, Thinking, Concept formation and creativity, Extra sensory perception, Fundamentals of Attitudes, learning, motivation and emotion. And aware of Yoga Psychology and Definition& characteristics of Personality and Indian approaches to Personality.

To provide the necessary knowledge of Kriyas, Asanas, Mudras, Bandas, Pranayama and meditative postures.

Regulations:

The candidates for 1Year Diploma in Yoga shall be required :

To have passed Higher Secondary of the recognized board or an examination recognized by the reputed institute as equivalent.

The admissions into the 1year shall be made by the IIARTRC- Mysore Recognised By University of Mysore

Physical fitness:

The selected candidates must be in good physical and mental health and fit to practice yoga as certified by a physician.

Dress:

The students shall be required to wear a suitable dress (White) as designed by the Institute which will permit them to practice yogic exercises comfortably during practical training.

Programme of study:

The 2semesters of 6 Months each shall include three theory papers and one practical.

The details of these papers are provided in the syllabus.

Instruction:

The programme duration shall be 2semesters of 6 Months each . The classes will be conducted from Monday to Friday with one hour theory and one hour for yoga practices. Practical classes for kriyas will be conducted on Monday. The medium of instruction shall be English . The method of instruction shall comprise of lectures and demonstration.

Yoga practice:

The students shall practice kriyas, asanas, bandhas, pranayama, and meditation during the programme on a regular basis. They shall maintain a record consisting of the details of the sequential movements involved in yogic practices. Such a record shall be submitted at the time of the practical examination for evaluation.

Attendance:

A student shall be permitted to appear for the University examination at the end of the academic year only if he/she puts in attendance stipulated as per the University rules and regulations. However, in view of the special nature of the course it is desirable that the student shall put in at least 75 per cent attendance to achieve the benefits of the programme.

Examination:

The examination patterns for the 1year Diploma 2semesters of 6 Months each examination.

The semester-end examinations are scheduled to be held in one or two weeks prior to the commencement of academic year-end examinations.

SEMESTER I**(20) CREDITS**

QP Code	TITLE OF THE PAPER	CREDIT PATTERN			TOTAL CREDITS
		L	T	P	
	FUNDAMENTALS OF YOGA	4	0	0	4
	BASICS OF HUMAN BIOLOGY	4	0	0	4
	BASICS OF INDIAN PHILOSOPHY AND PSYCHOLOGY	0	0	6	6
	YOGA PRACTICE	0	0	6	6
		8	0	12	20

SEMESTER II**(20) CREDITS**

QP Code	TITLE OF THE PAPER	CREDIT PATTERN			TOTAL CREDITS
		L	T	P	
	INDIAN PHILOSOPHY AND SPIRITUALITY	4	0	0	4
	KUNDALINI, CHAKRAS AND MUDRAS	4	0	0	4
	AYURVEDA AND NATUROPATHY	0	0	6	6
	ADVANCED YOGA PRACTICE	0	0	6	6
		8	0	12	20

Scheme for semester examinations

C3 Total marks

70 marks**Part-1** Simple answer questions (1 to 12 numbers)

2x10 Questions (12 questions)

20 marks***Answer any ten of the following*****Part-2** Descriptive questions. (13 to 20)**Part-3** 10x 2 Questions

Write Long answer questions (21 to 24)

Answer any two of the following

Course – I: Fundamentals of Yoga

1. Introduction to Yoga:

Definition, nature and scope of yoga.

Elements of Yoga in Vedic and Upanashadic literature.

Development of yoga through the ages.

Schools of yoga :

Karma Yoga,

Bhakti Yoga,

Jnana Yoga,

Hatha yoga,

Raja yoga

and Mantra Yoga.

-Introduction to Yoga

Introduction to Hatha Yoga Pradipika and Gheranda Samhitha

Chakra theory and kundalini yoga

Meditation. Its nature and scope. Different types of meditation.

Relevance of Yoga in modern life.

Reference books:

Chatterjee, S.C. & Datta, D.M. (1968). An Introduction to Indian philosophy. 7th ed. Calcutta:

University of Calcutta.

Georg Feuerstein (2002) The Yoga Tradition: Its History, Literature, Philosophy and Practice. New Delhi. Bhavana Books & Prints.

Hiriyana, M (1932/2000). Outlines of Indian Philosophy. Delhi, Motilal Banarasidas

Hume, R.E. (ed.) (1921). The Thirteen Principal Upanishads. London: Oxford University Press.

Joshi, K.S. (1985) Yoga in daily life, Delhi : Orient paper backs

Naranjo, C and Ornstein, R.E. (1974) On the psychology of meditation, New York: Viking press.

Mahesh Yogi, (1963). Transcendental meditation. New York: New American library.

Rama, Swami (1992) Meditation and its practice. Honesdale : Himalayan International Institute of Yoga Science and Philosophy of USA.

Naranjo, C and Ornstein, R.E. (1974) On the psychology of meditation, New York: Viking press.

Ramarao, R. (2006) Journey to Real self, Yoga chiatanya publications & Yoga consciousness

trust, Vijnigiri, VZM.

Rao, P.V.K. (1999). Dhyanam. Nava Sahiti Book House, Vijayawada

Taimni I.K. (1961/1999) *The Science of Yoga (The Yoga Sutras of Patanjali)*, The

Theosophical Publishing House, Adyar.

Course – II: Basics of Human Biology

1. Cell structure-tissues-excitability of the cell.
2. Introduction to systems in the body : Skeletal system and Muscular system.
3. Introduction to systems in the body : Digestive system ,Circulatory system, Respiratory system , Reproduction, Excretory system and Endocrine system,
4. Nervous system
5. Nutrition and dietetics: Energy production ,Metabolism of carbohydrates, proteins, lipids,water, Minerals and vitamins.

Reference books:

Chaudhari, S.K. (1988). Concise Medical Physiology. Calcutta: New Central Book Agency.

Ganong, W.F. (1967). Review of Medical physiology. Connecticut :Appleton – Lango.

Ghosh, H.N. (1984). Chakrabarti, Ghosh and Sahana's Human Physiology. 2nd Ed. Calcutta:

The New Book Stall.

Guyton, A.C. (1986). Text book of medical physiology.7th Edition.Philadelphia. WB Sauncers Company.

Keel, C.A., Neil, E and Joels, N. Ed. (1986).13th Edition.Samson-Wright's Applied Physiology., New Delhi: Oxford university press.

West, J.B. Ed. (1985) 11th Edition. Best and Taylor's Physiological basis of medical practice.Baltimore : Williams & Wilkins.

Course – III: Basics of Indian Philosophy and Psychology

1. Indian Philosophy: General nature and characteristics, Development of Indian philosophy.
2. Outlines of Vedic thought, Nyaya,Vaisesika ,Sankya,Yoga and Sankara Philosophy
3. Introduction to Psychology: Definition, Nature and Methods of psychology: Experiment, observation, introspection, interview and case-study.
4. Yoga Psychology: Concepts of Self and Consciousness, Indian approaches to Personality.
5. Fundamentals of Sensation, Perception, Extra sensory perception(ESP),Attention, Thinking, creativity, Memory Attitudes, learning, motivation and emotion.

Reference books:

Chatterjee, S.C. &Datta, D.M. (1968).An Introduction to Indian philosophy. 7th ed. Calcutta:

University of Calcutta.

Hiriyana, M (1932/2000).Outlines of Indian Philosophy. Delhi, MotilalBanarasidas

Naranjo, C and Ornstein, R.E. (1974) On the psychology of meditation, New York: Viking press.

Parameswaran, E.G. (1989). Invitation to psychology. Neel Kamal Publishers, Hyderabad
Radhakrishnan, S. & Moore, A.C. (1957). A Source Book of Indian philosophy. London:
George Allen & Unwin Ltd.
Radhakrishnan, S. (1920). Indian Philosophy, Vol.1 & 2. London: George Allen & Unwin.

Course –IV: YOGA PRACTICE

The students are required to learn to practice and also teach the following. They are to maintain a record which consists of the step by step details of the yoga practices along with an account of the possible benefits of the practices.

The principles, which should be adopted in practice, are the following:

1. Proper gradation in order of flexibility, balance and difficulty in performance.
2. Each asana is to be analyzed into intermediate positions in a natural sequence of movement.
3. For purposes of class training each movement to be associated with a count to each the final pose.
4. Rhythmic breathing should be observed. When the chest is in the expanding position inspiration should take place. In the contracting position expiration should take place rhythmically with movement. In certain asanas duration of retention is important.
5. Proper relaxation should be allowed in between the batches of asanas.

Sukshma vyayamam

Kriya Practicals:

1. Neti - Jala and Sutra
2. Dhauti – Jala
3. Kapalabhati
4. Trataka

Bandha Traya:

1. Jalandharabandha
2. Moolabandha
3. Uddiyanabandha

Pranayama:

1. Nadisuddhi
2. Suryabhedana
3. Seetali
4. Sitkari

Asanas:

Meditative postures:

1. Sukhasana
2. Swastikasana
3. Ardhapadmasana

4. Padmasana
5. Siddhasana
6. Vajrasana

Relaxation postures:

1. Shavasana
2. Makharasana
3. Matsya kridasana

Suryanamaskara:

1. Pranamasana
2. Hasta uttanasana
3. Padahastasana
4. Aswasanchalanasana
5. Dandasana
6. Ashtangasana
7. Bhujangasana
8. Parvatasana

Standing postures:

1. TiryakTadasana
2. Trikonasana
3. Parivrita Trikonasana
4. Veerabhadrasana
5. Katichakrasana

Balancing Postures:

1. Tadasana
2. Vrikshasana
3. Natarajasan
4. Ekapadasana
5. Grudasana
6. Pada Angustasana

Sitting postures:

1. Bhadrasana
2. Virasana
3. Ardha-matsyendrasana
4. Ushtrasana
5. Suptavajrasana
6. Shashankasana
7. Simhasana
8. Marjariasana

9. Shashanka Bhujangasana
10. Yogamudrasana
11. Paschimottanasana
12. Poorvotnasana
13. Lolasana

Prone postures:

1. Sarpasana
2. Bhujangasana
3. Dhanurasana
4. Shalabhasana

Supine postures:

1. Uttanapadaasana
2. Pavanamuktasana
3. Navasana
4. Sethubandasana
5. Chakrasana
6. Yoganidrasana
7. Matyasana

Inverted postures:

1. Vipareetakarini asana
2. Sarvangasana
3. Halasana
4. Sirshasan

Advanced Postures:

1. Kurmasana
2. Hamsasana
3. Myurasana
4. Brahmacharyasan
5. Ekapadgreevasan

Reference books:

Iyenger, B.K.S. (1976). *Light on yoga*. London: Unwin Hyman Ltd.

Ramarao, R. (2015). *A book on Anushtana Yoga Vedanta*

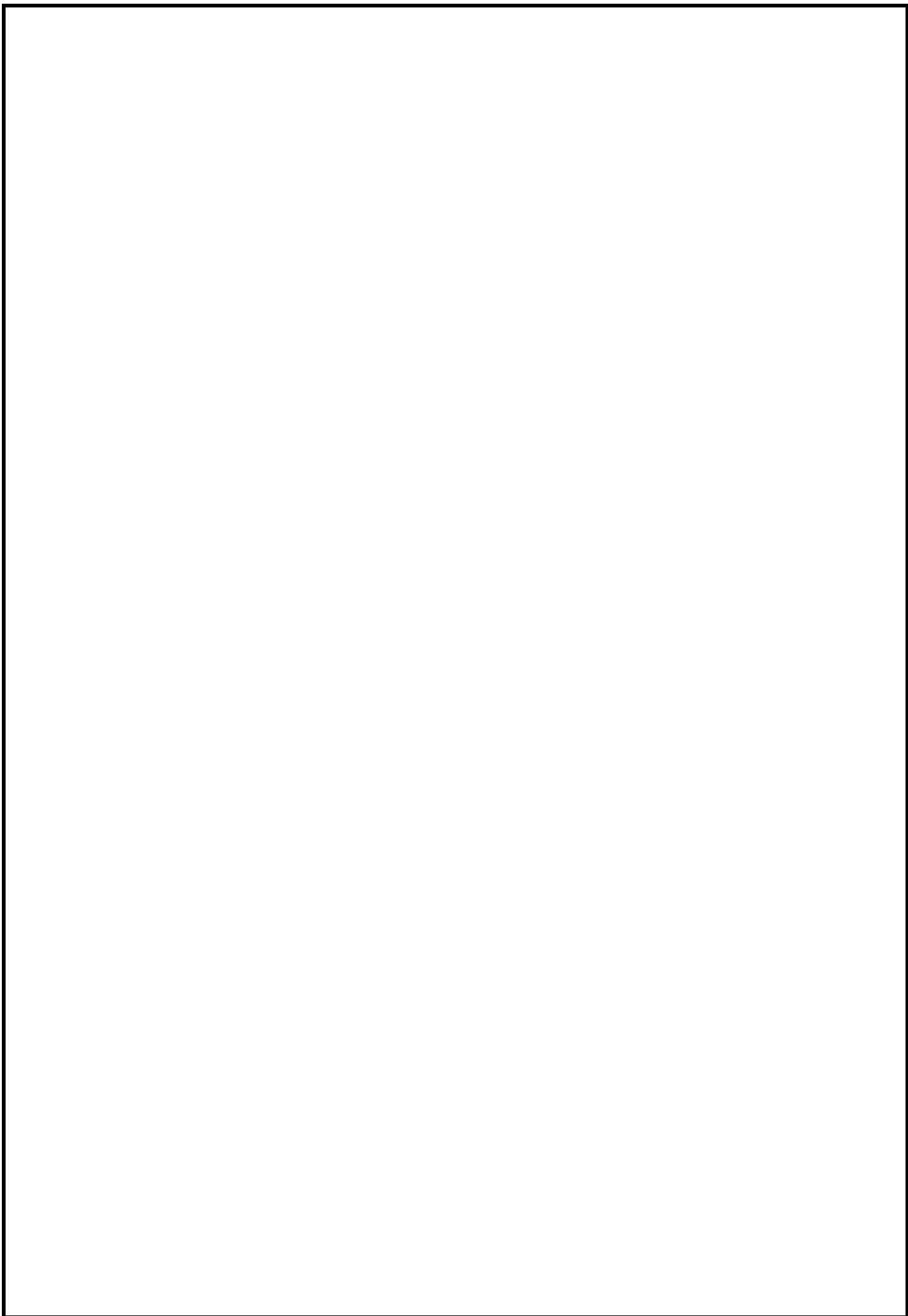
(Yoga chaitanya Pradeepika) (Telugu) Yoga consciousness trust, VZM.

Satyananda Saraswati, Swami (1989). *Asana, pranayama, mudra, bandha*. Munger: Bihar School of Yoga.

Swami Muktibodhananda, (ed.) (1985): *Hatha Yoga Pradipika: Light on Hatha Yoga* com. Munger Yoga Publication trust.

Swami Kuvalayananda (ed.) (1935). *Asanas*. Lonavla. Kaivalyadhama.

Venkata Reddy, M. ed. (1982). *Hatha Ratnavali*. Arthamuru:



Course – I: Fundamentals of Yoga

Course objectives:

To aware the knowledge of yoga and its nature and development of yoga.

To learn the knowledge of schools of yoga like Karma Yoga, Bhakti Yoga, Jnana Yoga, Raja yoga, Hatha yoga and Mantra Yoga.

To learn the information about Chakra theory & kundalini yoga.

To attain the knowledge of meditation and its types and relevance of yoga to modern life.

Course Outcomes:

- The student can understand the knowledge of yoga and its nature and development of yoga.
- The student can understand the knowledge of schools of yoga like Karma Yoga, Bhakti Yoga, Jnana Yoga, Raja yoga, Hatha yoga and Mantra Yoga.
- The student developed the knowledge of Scientific research on yoga.
- The student understood the information about Chakra theory & kundalini yoga.
- The student has attained the knowledge of meditation and its types and relevance of yoga to modern life.

Learning Outcomes Unit wise:

UNIT I:

1. Introduction to Yoga:

-Definition, nature and scope of yoga.

-Elements of Yoga in Vedic and Upanashadic literature.

-Development of yoga through the ages.

- Schools of yoga : Karma Yoga, Bhakti Yoga, Jnana Yoga, Hatha yoga, Raja yoga and Mantra Yoga.

-Introduction to Yoga Sutra

Learning Outcomes:

The student can develop to aware the knowledge and understanding about the meaning of Yoga and its nature and scope.

The student can develop to aware the knowledge and understanding the element of yoga and importance of yoga in vedic and Upanishad period.

The student can develop to aware the knowledge and understanding the importance of yoga and its developed in different stages.

- The student can develop to aware the knowledge and understanding concept of various types of yoga like Karma Yoga, Bhakti Yoga, Jnana Yoga, Hatha yoga, Raja yoga and Mantra Yoga.
- The student can develop to aware the knowledge and understanding concept of Yoga sutras.

Unit II:

Introduction to Hatha Yoga Pradipika and Gheranda Samhitha

Learning Outcomes:

- The student can develop to aware the knowledge and understanding concepts of Hatha Yoga Pradipika and Gheranda Samhitha.

Unit III:

Chakra theory and kundalini yoga

Learning Outcomes:

- The student can develop to aware the knowledge and understanding concept of Chakras like Mooladhara, Swadistana , Manipura, Anhatha, Visudhi, Agna, Bindhu, Sahashra and also aware on Kundalini yoga.

Unit IV:

Meditation. Its nature and scope. Different types of meditation.

Learning Outcomes:

- The student can develop to aware the knowledge and understanding the meaning of Meditation and its types.

Unit V:

Relevance of Yoga in modern life.

Learning Outcomes:

- The student can develop to aware the knowledge and understanding relevance of Yoga in modern life.

06.Course Duration: The course duration is one semesters or 6 months and each period **50 minutes**.

Course Contents

Unit No.	Units with its Contents/Chapters	No. Of Sessions
I	1.Introduction to Yoga: -Definition, nature and scope of yoga. -Elements of Yoga in Vedic and Upanashadic	10

	literature. -Development of yoga through the ages. - Schools of yoga : Karma Yoga, Bhakti Yoga, Jnana Yoga, Hatha yoga, Raja yoga and Mantra Yoga. -Introduction to Yoga Sutras	
II	Introduction to Hatha Yoga Pradipika and Gheranda Samhitha	06
III	Chakra theory and kundalini yoga	04
IV	Meditation. Its nature and scope. Different types of meditation.	03
V	Relevance of Yoga in modern life	02

08. Teaching Methods:

The course will use the following pedagogical tools:

- Lecture method
- Demonstration method
- Group Discussion Method
- Use of internet and visual presentation.
- Use of Block board, News paper, Magazines, audio, video clips.

09. Evaluation:

A	Continuous Evaluation Component comprising of Assignments / Class Participation / Class test/Presentation on specific topic etc.	-----
B	Mid-Exam	Internal Assessment-20 Marks
C	End –Semester Examination	External Assessment-80 Marks

10. Reference Books:

- Georg Feuerstein (2002) *The Yoga Tradition: Its History, Literature, Philosophy and Practice*. New Delhi. Bhavana Books & Prints.
- Rama, Swami (1992) *Meditation and its practice*. Honesdale : Himalayan International Institute of Yoga Science and Philosophy of USA.
- Naranjo, C and Ornstein, R.E. (1974) *On the psychology of meditation*, New York: Viking press.
- Joshi, K.S. (1985) *Yoga in daily life*, Delhi : Orient paper backs
- Taimni I.K. (1961/1999) *The Science of Yoga (The Yoga Sutras of Patanjali)*, The Theosophical Publishing House, Adyar.
- Hiriyana, M (1932/2000). *Outlines of Indian Philosophy*. Delhi, Motilal Banarasidas.
- Shankara Devananda Saraswati, Swami. (1986) *Yogic management of common diseases*. Munger : Bihar School of Yoga.
- Funderburke, J. (1977). *Science studies yoga : A review of physiological data*, Honesdale : Himalayan International Institute of Yoga Science and Philosophy of USA.
- Udapa, K.N. (1985). *Stress and its management by yoga*. Delhi : Motilal Banarsidas.
- Goleman, D. (1976) *The varieties of meditative experience*. New York: Irvington publishers.
- Mahesh Yogi, (1963). *Transcendental meditation*. New York: New American library.
- Johnson, O and Farrow, J.T. Ed. (1977) *Scientific research on the transcendental meditation program : Collected papers*. Vol. 1. Los Angeles : Meru press.
- Ornstein, R.E. (1972). *The psychology of consciousness*. New York: Viking press.
- Rama, Swami, Ballantine, R and Ajaya, Swami. (1976) *Yoga and psychotherapy* Honesdale: Himalayana International Institute of Yoga Science and Philosophy of USA.
- Rao, P.V.K. (1999). *Dhyanam*. Nava Sahiti Book House, Vijayawada
- Ajaya, Swami (1985) *Psychotherapy east and west : A unifying paradigm*. Honesdale: Himalayan International Institute of Yoga Science and Philosophy of USA.
- Ramakrishna Rao, K. (1989), *Meditation : Secular and sacred*. Presidential address to the Indian Academy of Applied Psychology, University of Calcutta.
- Reddy, M.V., Murthy, K.J.R., Sahay, B.K. and Prasad, B.N. (2005). *Yogic Therapy*, Arthamuru, Sri M.S.R. Memorial Yoga Series
- Shapiro, D.H. and Walsh, R.N. Ed. (1984) *Meditation : classic and contemporary perspectives*. New York : Aldine.
- Woods, R. Ed. (1980). *Understanding mysticism*. New York: Image books.
- Chatterjee, S.C. & Datta, D.M. (1968). *An Introduction to Indian philosophy*. 7th ed. Calcutta: University of Calcutta.
- Dasgupta, S. (1975). *A History of Indian philosophy*. Vol. 1-5. Delhi: Motilal Banarsidas.
- Hume, R.E. (ed.) (1921). *The Thirteen Principal Upanishads*. London: Oxford University Press.
- Radhakrishnan, S. & Moore, A.C. (1957). *A Source Book of Indian philosophy*. London: George Allen & Unwin Ltd.
- Radhakrishnan, S. (1820). *Indian Philosophy*, Vol.1 & 2. London: George Allen & Unwin.
- Sarma C.D. *Critical Survey of Indian Philosophy*. Motilal Banarasidas, New Delhi

Course– II: Basics of Human Biology

Course objectives:

- To aware the knowledge of concept of cell and its nature of structure.
- To learn the knowledge of various systems in the human body like circulatory, Respiratory, Digestive, Reproductive and Excretatory systems, functions of anatomy and physiology of Skeletal system and muscles.
- To gain the knowledge of anatomy and physiology of Digestive system and functions of various glands.
- To learn the information about the importance of diet and nutrition.

Course Outcomes:

- The student can understand the knowledge of concept of cell and its nature of structure.
- The student can understand the knowledge of various systems in the human body like circulatory, Respiratory, Digestive, Reproductive and Excretatory systems, functions of anatomy and physiology of Skeletal system and muscles.
- The student developed the knowledge of anatomy and physiology of Digestive system and functions of various glands.
- The student understood the information about the importance of diet and nutrition.

Learning Outcomes Unit wise:

UNIT I:

Cell structure-tissues-excitability of the cell

Learning Outcomes:

The student can develop to aware the knowledge and understanding about the meaning of cell and its nature.

Unit II:

Introduction to systems in the body : Skeletal system and Muscular system.

Learning Outcomes:

The student can develop to aware the knowledge and understanding the element of various systems in the human body.

- The student can develop to aware the knowledge and understanding the concepts of Skeletal system and Muscular system.

Unit III:

Introduction to systems in the body : Digestive system ,Circulatory system,Respiratory system , Reproduction, Excretory system and Excretory system.

Learning Outcomes:

- The student can develop to aware the knowledge and understanding the concept of Digestive system.
- The student can develop to aware the knowledge and understanding the concept of Circulatory system.
- The student can develop to aware the knowledge and understanding the concept of Respiratory system.
- The student can develop to aware the knowledge and understanding the concept of Reproductive system.
- The student can develop to aware the knowledge and understanding the concept of Excretory system.
- The student can develop to aware the knowledge and understanding the concept of Excretory system.

Unit IV:

Nervous system

Learning Outcomes:

- The student can develop to aware the knowledge and understanding the elements of Nervous system.

Unit V:

Nutrition and dietetics: Energy production ,Metabolism of carbohydrates, proteins, lipids, water, Minerals and vitamins.

Learning Outcomes:

- The student can develop to aware the knowledge and understanding the importance of diet and nutrition.
- The student can develop to aware the knowledge and understanding the importance of Metabolism of carbohydrates, proteins, lipids, water, Minerals and vitamins.

06.Course Duration: The course duration is one semesters or 6 months and each period **50 minutes**.

Unit No.	Units with its Contents/Chapters	No. of Sessions
	Cell structure-tissues-excitability of the cell.	04
	Introduction to systems in the body : Skeletal system and Muscular system.	06
	Introduction to systems in the body : Digestive system ,Circulatory system,Respiratory system , Reproduction, Excretory system and Excretory system.	06
	Nervous system	04
	Nutrition and dietetics: Energy production ,Metabolism of	05

carbohydrates, proteins, lipids, water, Minerals and vitamins.	
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Teaching Methods:

The course will use the following pedagogical tools:

- Lecture method
- Demonstration method
- Group Discussion Method
- Use of internet and visual presentation.
- Use of Block board, News paper, Magazines, audio, video clips.

Reference Books:

Chaudhari, S.K. (1988). Concise Medical Physiology. Calcutta: New Central Book Agency.

Ganong, W.F. (1967). Review of Medical physiology. Connecticut : Appleton – Lango.

Ghosh, H.N. (1984). Chakrabarti, Ghosh and Sahana's Human Physiology. 2nd Ed. Calcutta:

The New Book Stall.

Guyton, A.C. (1986). Text book of medical physiology.7th Edition.Philadelphia. WB Sauncers Company.

Keel, C.A., Neil, E and Joels, N. Ed. (1986).13th Edition.Samson-Wright's Applied Physiology., New Delhi: Oxford university press.

West, J.B. Ed. (1985) 11th Edition. Best and Taylor's Physiological basis of medical practice.Baltimore : Williams & Wilkins.

Course – III: Basics of Indian Philosophy and Psychology

Course objectives:

- To learn about knowledge of nature and characteristics, Development of Indian philosophy.
 - To learn about knowledge of Vedic thought, Nyaya,Vaisesika ,Sankya,Yoga and Sankara Philosophy.
 - Introduction to Psychology is to communicate knowledge of defination of nature of Indian psychology.
 - To learn about methods of psychology like Introspection method, observation method, Experimental method and Case study method.
 - To learn about the concept Yoga psychology, Self and Consciousness in the direction of Indian Psychology.
 - To learn about the meaning of Personality and Indian approaches of personality methods.
 - To learn about Fundamentals of Sensation, Perception,Attention, Thinking, creativity, Memory Attitudes, learning,motivation and emotion.
- To learn about Extra Sensory Perception (ESP) methods like Telepathy, Pre-recognition, Psychokinesis(PK) and Clairvoyance .

Course Outcomes:

- The student can understand the knowledge about the nature of Indian psychology.
- The student can understand the knowledge about Vedic thought, Nyaya, Vaisesika, Sankya, Yoga and Sankara Philosophy.
- The student can understand the knowledge about the knowledge about methods of psychology like Introspection method, observation method, Experimental method and Case study method.
- The student can understand the knowledge about the knowledge about the concept of Self and Consciousness in the direction of Indian Psychology.
- The student can understand the knowledge about Fundamentals of Sensation, Perception, Attention, Thinking, creativity, Memory Attitudes, learning, motivation and emotion.
- The student can understand the knowledge Extra Sensory Perception (ESP) methods like Telepathy, Pre-recognition, Psychokinesis (PK) and Clairvoyance .
- The student can understand the knowledge about the knowledge about the meaning of Personality and Indian approaches of personality methods.

Learning Outcomes Unit wise:

UNIT I:

Indian Philosophy: General nature and characteristics, Development of Indian philosophy.

Learning Outcomes:

- The student can develop to aware the knowledge and understanding the meaning, nature and characteristics of Indian Philosophy .
- The student can develop to aware the knowledge and understanding the developments of Indian philosophy.

Unit II:

Outlines of Vedic thought, Nyaya, Vaisesika, Sankya, Yoga and Sankara Philosophy

Learning Outcomes:

- The student can develop to aware the knowledge and understanding the outlines of Indian philosophical systems.
- The student can develop to aware the knowledge and understanding about Vedic thought.
- The student can develop to aware the knowledge and understanding about Nyaya philosophy.
- The student can develop to aware the knowledge and understanding about Vaisesika Philosophy.
- The student can develop to aware the knowledge and understanding about Sankya philosophy.

Unit III:

1. Introduction to Psychology: Definition, Nature and Methods of psychology: Experiment, observation, introspection, interview and case-study.

Learning Outcomes:

- The student can develop to aware the knowledge and understanding the definition of Psychology, nature and scope of Psychology.
- The student can develop to aware the knowledge and understanding about different types of methods like Introspection, observation, experimental and case study.

Unit IV:

Yoga Psychology: Concepts of Self and Consciousness, Indian approaches to Personality.

Learning Outcomes:

- The student can develop to aware the knowledge and understanding the concept of Self.
- The student can develop to aware the knowledge and understanding the concept of Consciousness and its stages.
- The student can develop to aware the knowledge and understanding the definition of personality and concept of Indian approaches to Personality.

Unit V:

Fundamentals of Sensation, Perception, Extra sensory perception(ESP),Attention, Thinking, creativity, Memory Attitudes, learning, motivation and emotion.

Learning Outcomes:

- The student can develop to aware the knowledge and understanding about sensation.
- The student can develop to aware the knowledge and understanding about perception
- The student can develop to aware the knowledge and understanding about Extra sensory perception(ESP).
- The student can develop to aware the knowledge and understanding about attention.
- The student can develop to aware the knowledge and understanding about thinking.
- The student can develop to aware the knowledge and understanding about creativity.
- The student can develop to aware the knowledge and understanding about memory.
- The student can develop to aware the knowledge and understanding about attitude.
- The student can develop to aware the knowledge and understanding about learning.
- The student can develop to aware the knowledge and understanding about motivation.
- The student can develop to aware the knowledge and understanding about emotion.

Unit No.	Units with its Contents/Chapters	No. of Sessions
1	Indian Philosophy: General nature and	

	characteristics, Development of Indian philosophy	
2	Outlines of Vedic thought, Nyaya, Vaisheshika, Sankhya, Yoga and Sankara Philosophy	
3	Introduction to Psychology: Definition, Nature and Methods of psychology: Experiment, observation, introspection, interview and case-study.	
4	Yoga Psychology: Concepts of Self and Consciousness, Indian approaches to Personality.	

Teaching Methods:

The course will use the following pedagogical tools:

- Lecture method
- Demonstration method
- Group Discussion Method
- Use of internet and visual presentation.
- Use of Black board, News paper, Magazines, audio, video clips.

10. Reference Books:

Chatterjee, S.C. & Datta, D.M. (1968). An Introduction to Indian philosophy. 7th ed. Calcutta:

University of Calcutta.

Hiriyana, M (1932/2000). Outlines of Indian Philosophy. Delhi, Motilal Banarasidas

Naranjo, C and Ornstein, R.E. (1974) On the psychology of meditation, New York: Viking press.

Parameswaran, E.G. (1989). Invitation to psychology. Neel Kamal Publishers, Hyderabad

Radhakrishnan, S. & Moore, A.C. (1957). A Source Book of Indian philosophy. London: George Allen & Unwin Ltd.

Radhakrishnan, S. (1920). Indian Philosophy, Vol.1 & 2. London: George Allen & Unwin.

Sinha, J. (1986). Indian Psychology (Vol.I and II). Delhi, Motilal Banarasidas.

1. Learning Outcomes:

Yoga practice:

Skshavyamam

Kriya Practicals:

1. Neti - Jala and Sutra 2. Dhauti – Jala 3. Kapalabhati 4. Trataka

BandhaTraya:

1. Jalandharabandha
2. Moolabandha
3. Uddiyanabandha

Pranayama:

1. Nadisuddhi
2. Suryabhedana
3. Seetali
4. Sitkari

Asanas:**Meditative postures:**

1. Sukhasana
2. Swastikasana
3. Ardhapadmasana
4. Padmasana
5. Siddhasana
6. Vajrasana

Relaxation postures:

1. Shavasana
2. Makharasana
3. Matsya kridasana

Suryanamaskara:

1. Pranamasana
2. Hasta uttanasana
3. Padahastasana
4. Aswasanchalanasana
5. Dandasana
6. Ashtangasana
7. Bhujangasana
8. Parvatasana

Standing postures:

1. TiryakTadasana
2. Trikonasana
3. ParivritaTrikonasana
4. Veerabhadrasana
5. Katichakrasana

Balancing Postures:

1. Tadasana
2. Vrikshasana
3. Natarajasan
4. Ekapadasana
5. Grudasana
6. Pada Angustasana

Sitting postures:

1. Bhadrasana
2. Virasana
3. Ardha-matsyendrasana
4. Ushtrasana
5. Suptavajrasana
6. Shashankasana
7. Simhasana
8. Marjariasana
9. Shashanka Bhujangasana
10. Yogamudrasana
11. Paschimottanasana
12. Poorvotnasan
13. Lolanasana

Prone postures:

1. Sarpasana
2. Bhujangasana
3. Dhanurasana
4. Shalabhasana

Supine postures:

1. Uttanapadaasana
2. Pavanamuktasana
3. Navasana
4. Sethubandasana
5. Chakrasana
6. Yoganidrasana
7. Matyasana

Inverted postures:

1. Vipareetakarini asana
2. Sarvangasana
3. Halasana
4. Sirshasana

Advanced Postures:

- 1.Kurmasana
2. Hamsasana
- 3.Myurasana
- 4.Brahmacharyasan
- 5.Ekapadgreevasan

Learning Outcomes:

□ The student can develop to aware the knowledge and understanding about the nature of Kriyas, Asanas, Mudras, Bandhas, Pranayama techniques and Meditaitaion techniques. These techniques makes them perfeccion, flexible and balancing in the directions of physical, mental , ethical, social and Spiritual aspects. Also makes them a good yoga practicener and teacher.

02. Course Duration: The course duration is one semesters or 6 months and each period **50 minutes**.

03. Course Contents: No. Of Sessions 120**Skshmayamam****Kriya Practicals:**

1. Neti - Jala and Sutra
2. Dhauti – Jala
3. Kapalabhati
4. Trataka

Bandha Traya:

1. Jalandharabandha
2. Moolabandha
3. Uddiyanabandha

Pranayama:

1. Nadisuddhi
2. Suryabhedana
3. Seetali
4. Sitkari

Asanas:**Meditative postures:**

1. Sukhasana
2. Swastikasana
3. Ardhapadmasana
4. Padmasana
5. Siddhasana
6. Vajrasana

Relaxation postures:

1. Shavasana
2. Makharasana
3. Matsya kridasana

Suryanamaskara:

1. Pranamasana
2. Hasta uttanasana
3. Padahastasana
4. Aswasanchalanasana
5. Dandasana
6. Ashtangasana
7. Bhujangasana
8. Parvatasana

Standing postures:

1. TiryakTadasana
2. Trikonasana
3. Parivrita Trikonasana
4. Veerabhadrasana
5. Katichakrasana

Balancing Postures:

1. Tadasana
2. Vrikshasana
3. Natarajasan
4. Ekapadasana
5. Grudasana
6. Pada Angustasana

Sitting postures:

1. Bhadrasana
2. Virasana
3. Ardha-matsyendrasana
4. Ushtrasana
5. Suptavajrasana
6. Shashankasana
7. Simhasana
8. Marjariasana
9. Shashanka Bhujangasana
10. Yogamudrasana
11. Paschimottanasana
12. Poorvotnasana
13. Lolasana

Prone postures:

1. Sarpasana
2. Bhujangasana
3. Dhanurasana
4. Shalabhasana

Supine postures:

1. Uttanapadaasana
2. Pavanamuktasana
3. Navasana
4. Sethubandasana
5. Chakrasana
6. Yoganidrasana
7. Matyasana

Inverted postures:

1. Vipareetakarini asana
2. Sarvangasana
3. Halasana
4. Sirshasana

Advanced Postures:

1. Kurmasana
2. Hamsasana
3. Myurasana
4. Brahmacharyasan
5. Ekapadgreevasan

04. Teaching Methods:

The course will use the following pedagogical tools:

- Lecture method
- Demonstration method
- Group Discussion Method
- Use of internet and visual presentation.
- Use of Block board, News paper, Magazines, audio, video clips.

06. Reference Books:

- Satyananda Saraswati, Swami (1989). *Asana, pranayama, mudra, bandha*. Munger: Bihar School of Yoga.
- Iyenger, B.K.S. (1976). *Light on yoga*. London: Unwin Hyman Ltd.
- Venkata Reddy, M. ed. (1982). *Hatha Ratnavali*. Arthamuru: M. Ramakrishna Reddy.
- Swami Muktibodhananda, (ed.) (1985): *Hatha Yoga Pradipika: Light on Hatha Yoga com*. Munger Yoga Publication trust.
- Swami Kavalayananda (ed.) (1935). *Asanas*. Lonavla. Kaivalyadhama