YENEPOYA
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REGULATIONS AND CURRICULUM GOVERNING

M.SC PRELIMINARY PROGRAM

(2024-25)

Name of the Constituent Unit/Centre: Yenepoya Medical College

RABBI ZIDNI 'ILMA

YENEPOYA
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Deralakatte, Mangalore, Karnataka.

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NOTIFICATION FROM THE UNIVERSITY

YENEPOYA UNIVERSITY

Office of the Registrar
University Road
P.O. Nithyananda Nagar
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Ref: No. YU/REG/ACA/3-ACM/2009 31.10.2009

NOTIFICATION

Sub: Starting of M.Sc. in pre & para clinical departments

Ref: Resolution of the Academic Council at its 3rd meeting held on 31.10.2009 vide agenda - 3

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The Academic Council at its 3rd meeting and subsequently the Board of Management at its 9th meeting held on 31.10.2009 have resolved to approve the proposal to start following M.Sc. in pre & para clinical departments:-

1. M.Sc Medical Anatomy
2. M.Sc Medical Physiology
3. M.Sc Medical Biochemistry
4. M.Sc Medical Pharmacology
5. M.Sc Medical Microbiology

This notification is issued for implementation with effect from the academic year 2010-2011.

I/c REGISTRAR
Registrar
YENEPOYA
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To:

The Principal - YMC

Copy to:

1. Controller of Examinations
2. File copy

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M.Sc. MEDICAL ANATOMY

Preamble

The prime concern of the Institute is to develop patterns of teaching in postgraduate medical education so as to demonstrate a high standard of medical education to all medical colleges and other allied institutions globally. This educational experience is imparted in an atmosphere of research.

Criteria for admission:

The Candidates must have passed B.Sc with 50% marks and with one subject of biological sciences or BAMS or BHMS or BPT or BPHARM or any other professional graduates from a recognized university of our country.

Duration of course:

A 3 year course. 1st year preliminary Basic Medical Sciences like Human Anatomy, Human Physiology & Biochemistry would be taught.

Final M.Sc (2 years) - Medical Anatomy would be studied by the student.

PROGRAM OUTCOME

PO 1	Is aware of *contemporary advances and developments in the field of Anatomy.*
PO 2	Has *acquired the competencies pertaining to the subject of Anatomy that are required to be practiced at all levels of health system.*
PO 3	Is able to discharge responsibilities and participate in National Health Education Programme.
PO 4	Is oriented to the *principles of research methodology.*
PO 5	Has acquired *skills in educating medical and paramedical professionals.*
PO 6	Has acquired *skills in effectively communicating with the students and colleagues from various medical and paramedical fields.*

PO 7	Has acquired skills of integrating anatomy with other disciplines as and when needed.
PO 8	Has acquired qualities of a good teacher capable of innovations in teaching methodology.
PO 9	Has been able to demonstrate adequate management skills to function as an effective leader of the team engaged in teaching and research.

COURSE OUTCOME

CO1 1. **Knowledge of Anatomy**

11Acquire competencies in gross and surface anatomy, Neuroanatomy, embryology, genetics, histology, radiological anatomy, applied aspects and recent advances of the above mentioned branches of anatomy to clinical practice. These are given in detail in subsequent sections

CO2 2. **Practical and Procedural skills**

2.1 Acquire mastery in dissection skills, embalming, tissue preparation, staining and museum preparation.

CO33. **Training skill in Research Methodology**

3.1 Acquire skills in teaching, research methodology, epidemiology & basic information technology.

3.2 Acquire knowledge in the basic aspects of Biostatistics and research methodology.

3.3 Has knowledge to plan the protocol of a thesis, carry out review of literature, execution of research project and preparation of report.

3.4 Has ability to use computer applications Microsoft office (Microsoft word, excel, power point), Internet, Searching scientific databases (e.g.PubMed, Medline, Cochrane reviews).

3.5 Acquire skills in paper & poster preparation, writing research papers and Thesis.

CO4 4. **Professionalism, attitude and communication skills:**

4.1 Develop honest work ethics and empathetic behavior with students and colleagues.

4.2 Acquire capacity of not letting his/her personal beliefs, prejudices, and limitations come in the way of duty.

4.3 Acquire attitude and communication skills to interact with colleagues, teachers and students.

CO5 5. **Teaching Anatomy**

5.1 Practicing different methods of teaching-learning.

5.2 Making presentations of the subject topics and research outputs.

CO6 6. Problem Solving

6.1 Demonstrate the ability to identify applied implications of the knowledge of anatomy and discuss information relevant to the problem, using consultation, texts, archival literature and electronic media.

6.2 Demonstrate the ability to correlate the clinical conditions to the anatomical/ embryological/hereditary factors.

6.3 Demonstrate the ability to evaluate scientific/clinical information and critically analyze conflicting data and hypothesis.

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FIRST YEAR M.SC.

GOALS:

The goal of M.Sc. (Medical) degree course education shall be to produce a competent Medical teacher who is capable of the following.

- Recognize the learning needs of the Medical, Dental and allied health science students.
- Mastered most of the competencies pertaining to the speciality that is required to be practiced by training and research.
- Create an awareness of contemporary advances and developments in the discipline concerned.
- Build up a spirit of scientific enquiry and an orientation to the Principles of Basic Skills required in Teaching of Medical, Dental and Paramedical professionals. An orientation to the Principles of Research Methodology

Objectives

At the end of the course, the student should be able to:

- Comprehend the normal disposition, inter-relationships, gross, functional and applied anatomy of organs and other structures in the body.
- Identify the histology of various tissues, and organs in the human body and correlate the normal structure with the functions as a prerequisite for understanding the altered state in various diseases.
- Comprehend the basic structure and connections between the various parts of the central nervous system so as to analyze its integrative and regulatory functions on the organs and systems. Student should be able to locate the site of gross lesions according to the symptoms manifested.
- To understand the basic principle of embryology (genetic inheritance and stages involved in development) of the organs and systems from the time of conception till birth. The student should recognize the critical stages of normal development and the effects of common teratogens, genetic mutations and environment hazards on it. They should be able to explain

the developmental basis of the occurrence of major variations, abnormalities and congenital anomalies

Subject Specific Learning competencies

- Describe gross anatomy of the entire body (including upper limb, lower limb, thorax, abdomen, head & neck and brain).
- To understand the normal disposition of gross structure, and their interrelationship in the human body.
- Describe the process of Gametogenesis, fertilization, implantation and placenta formation in early human embryonic development along with its variation
- Describe the microscopic structure of various tissues & organs and correlate structure with functions.

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Syllabus for preliminary (1st year)

M. Sc. Preliminary Anatomy Syllabus

1. General Anatomy (Theory)
2. Gross Anatomy (Theory and Demonstration)
3. Histology (Microscopic Anatomy) Theory
4. Embryology (Theory)
5. Genetics (Theory)

TOPIC	CONTENTS	HOURS
GENERAL ANATOMY	• Introduction and Terminologies - History, subdivisions in anatomy, anatomical terminologies • Epithelial tissues • Connective tissues • Skeletal tissue • Muscle tissue • Nervous tissue • Lymphoid tissues • Cardiovascular system • Skin and fascia	**10 hours**
UPPER LIMB	**PECTORAL REGION - SCAPULAR REGION** Axilla Arm Fore arm Cubital fossa Hand Osteology of upper limb	**20 hours**

	Joints of upper limb Major nerves of upper limb	
LOWER LIMB	Thigh Gluteal region Popliteal region Leg Foot Osteology of lower limb Joints of lower limb	**– 20 hours**
THORAX	Thoracic wall Mediastinum Pleura and lungs Diaphragm:. Pericardium and heart	**15 hours**
ABDOMEN AND PELVIS –	Peritoneum: Large blood vessels of the abdomen and pelvis: Abdominal viscera:	**25 hours**
HEAD AND NECK –	Scalp: Face side of the neck Cranial cavity Deep structures of the Neck – Orbit Temporal and infra-Temporal Submandibular region Tongue Pharynx Soft palate Nasal cavity –	**30 hours**

	Larynx: Ear	
Neuroanatomy –	Spinal cord Brain stem Cerebellum Diencephalon Cerebrum Ventricles of CNS: Blood Supply	**16 hours.**
HISTOLOGY-	Epithelium Glands Connective tissue Cartilage Bones- Muscle Nervous tissue Circulatory system. Lymphatic tissue- Digestive system Urinary system. Reproductive system Nervous system Respiratory system Endocrine system Integumentary System	**25 hours**
EMBRYOLOGY	**GENERAL EMBRYOLOGY** Mitosis, Meiosis Fertilization, Implantation bilaminar germ disc ,notochord formation, embryonic folds ,foetal membranes	**28 hours**

	Spermatogenesis, Oogenesis Menstrual Cycle Placenta **SYSTEMIC EMBRYOLOGY** Cardio vascular system Gastro intestinal system Urinary system Genital system Respiratory system Endocrine glands Central nervous system Pharyngeal apparatus Development of face	
GENETICS	Introduction Chromosomes, Karyotyping. Chromosomal abnormalities	**6 hours**

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TEACHING AND LEARNING METHODOLOGY

Departmental Faculty and Staff emphasizes on teaching basic fundamentals of

- Gross anatomy
- Microscopic anatomy and its correlation with function
- Developmental anatomy and anatomical basis of occurrence of congenital defects
- Nerve lesions and its anatomical basis and applied aspects of relevant clinical conditions.
- The general pattern of teaching methodology followed by all the faculty members and teaching staff in the department is :

1. Didactic Lecturers: discussing the topic in detail in one hour lecture time.
2. Followed by dissection / practicals

SCHEME OF TEACHING HOURS FOR THEORY AND PRACTICALS

Topics	**Theory**	**SGT/Practical**
General Anatomy	10	7
Gross Anatomy	126	349
Micro – Anatomy	25	43
Embryology	28	18
Genetics	6	1
Total	**195**	**418**

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INTERNAL ASSESSMENT:

1. Regular periodic assessment shall be conducted during the year
2. 3 sessional examinations are conducted in first year
3. Average of the best 02 examinations will be considered for calculating the final internal assessment marks.

Attendance:

Minimum of not less than 80% attendance in theory & practicals is essential for appearing in the examination.

SUMMATIVE ASSESSMENT

Subject	Internal Assessment	University Exam	Total
Including: General anatomy, Gross Anatomy, Osteology, Histology, Embryology & Genetics	20 – Theory	80 – Theory	100 marks

Along with Anatomy paper, preliminary students will appear for Physiology & Biochemistry papers also.

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LIST OF BOOKS FOR I M.SC STUDENTS

I. GENERAL ANATOMY

1. General Anatomy By Vishram Singh
2. Hand book of General Anatomy By B.D Chaurasia

II. GROSS ANATOMY

1. Text Book of Anatomy by Vishram Singh, 2nd Edition
    a) Upper limb & thorax
    b) Abdomen & Lower limb
    c) Head & Neck
2. Text book of Anatomy by B.D Chaurasia, Vol I, II, III, 7th Ed.

III. NEURO ANATOMY

1. Text book of Neuro Anatomy by Vishram Singh, 2nd Edition
2. Text book of Neuro Anatomy by I.B Singh, 9th Edition

IV. EMBRYOLOGY

1. Human Embryology by I.B Singh, 10th Edition
2. Clinical Embryology by Vishram Singh (2nd Edition 2014)

V. HISTOLOGY

1. Text Book of Human Histology by I.B Singh, 7th Edition
2. Concise text book of Histology by Varalakshmi K.L
3. Text Book of Histology J.P Gunasegaran

VI. DISSECTION

1. Gray's Dissector

2. Cunningham's manual of dissection – 3 Volumes
3. Atlas of Anatomy Gilroy by Thieme

VII. GENETICS BOOK

1. Principals of Clinical Genetics By Yogesh Sontakke
2. Human Genetics S.D Gangane

VIII. REFERENCE BOOK

1. Clinical & Surgical Anatomy, Vishram Singh, 2nd Edition.
2. Clinical anatomy by Neeta V Kulakarni 3rd Edition Vol I, II
3. Grays Anatomy for students - By Richard L Drake
4. Clinical Anatomy by regions - by Richard S.Snell
5. Clinically Oriented Anatomy - by Keith L Moore
6. Difiores Atlas of Histology with Functional Correlation' Eroschenko,Victor P
7. Thieme Atlas of Anatomy
8. Manipal Manual on Clinical Anatomy, by Sampath Madhayastha, Vol I, II
9. Genetics in Medicine Thompson & Thompson
10. Emery's Elements of Medical genetics
11. The Developing Human - by Keith L Moore
12. Text book of Anatomy by A.K Dutta 3 Volumes

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BLUE PRINT

TOPICS IN THEORY PAPER

THEORY PAPER – Total 80 Marks

TOPIC	MARKS DISTRIBUTION	weightage
General Anatomy	02	2.5
Extremities	14	17.5
Thorax including diaphragm	7	8.75
Abdomen & Pelvis	19	23.75
Head & neck	19	23.75
Neuroanatomy	5	6.25
Histology	5	6.25
Embryology	7	8.75
Genetics	2	2.5
Total	**80**	**100**

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QUESTION PAPER PATTERN – THEORY

Question type	Total Marks - 80	Topics
Long Essays	2 x 10 = 20 marks	Abdomen & Pelvis Head & neck
Short Essays	8 x 5 = 40 marks	Limbs, Head & Neck, Thorax, Abdomen & Pelvis, Histology, Embryology, Neuroanatomy
Short Answers	10 x 2 = 20 marks	General anatomy, Genetics, Limbs, Head & Neck, Thorax, Abdomen & Pelvis, Embryology

PRACTICAL EXAMINATION: NIL

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I YEAR M.SC MEDICAL PRELIMINARY - THEORY

- Your answer should be specific to question asked
- Draw neat and labeled diagrams wherever necessary

Time: **Max Marks: 50**

Date:

I. Long Essay **1x10=10 marks**

1. Explain the Parotid gland under following headings: Gross features, relations, Nerve supply and applied anatomy.(2+3+3+2)

II. Short Essay **6x5= 30 marks**

2. Explain the origin course termination branches and applied anatomy of left coronary artery.
3. Describe origin, course and branches of the median nerve. Add a note on carpel tunnel syndrome.
4. Enumerate the structures derived from first pharyngeal arch
5. Describe the Sulci and Gyri of Superolateral surface of Cerebrum. Add a note on the Speech areas present on it.
6. Describe the blood supply and lymphatic drainage of stomach
7. Explain the boundaries, contents and applied anatomy of femoral triangle.

III. Short Answers **2x5=10 marks**

8. Draw a neat labeled diagram of Histology of transverse section of bone.
9. Explain any 4 characteristic features of a synovial joint.
10. Enumerate the structures forming the supports of the uterus.
11. Explain any 4 defensive mechanism of inguinal canal
12. Enumerate the structures related anteriorly to the right and left kidney

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M.Sc MEDICAL ANATOMY

(SECOND & THIRD YEAR)

Goal:

The postgraduate, course M.Sc. (Medical Anatomy) should enable a medical graduate to become a competent specialist, acquire knowledge and skills in educational technology for teaching medical, dental and health sciences and conduct research in bio-medical sciences.

SPECIFIC LEARNING OBJECTIVES:

At the end of the course, a Postgraduate in M.Sc Medical Anatomy shall be able to

1. Demonstrate comprehensive knowledge and understanding of gross and microscopic structure of human body and skills to demonstrate special dissection and histological and histochemical techniques.
2. Comprehend normal disposition, interrelationships. functional and applied anatomy of the various structures of the body.
3. Describe development of human body to provide an anatomical basis for understanding the structure and correlate with functions both in health and in disease presentations.
4. Demonstrate knowledge of basic and systemic embryology including genetic inheritance and sequential developments of organs and systems.
5. Recognize critical stages of development and the effects of common teratogens, genetic mutations and environmental hazards.
6. Explain development basis of major variations and abnormalities.
7. Aware of contemporary advances and developments in anatomy and related bio-medical field.

8. Demonstrate competence in basic concepts of research and acquire a spirit of enquiry in research.

9. Critically evaluate published research literature.

10. Recognize continuing educational needs and develop skills as a self-directed learner.

11. Select and use appropriate learning resources and teaching techniques as applicable for teaching and evaluation of medical and allied health science students.

12. Carryout professional obligations ethically and in keeping with objectives of National Health Policy.

13. Function as an effective member in health care, research and training.

14. Exhibit interpersonal behavior in accordance with social norms and expectations.

15. Acquire knowledge Ultrasound relating to latest non-invasive techniques tike X-rays, CT Scan, MRI. and their interpretation in health and disease conditions

16. Describe the methodology, techniques of embalming, preservation of cadavers and museum techniques, and perform the procedures.

17. Describe and interpret Anatomy Act as in existence.

The candidate is eligible for M.Sc degree in medical Anatomy after.

1. Completing the two – year's course.(after one year preliminary)
2. Succeeding in both subsidiary and main examinations.

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SUBJECT SPECIFIC COMPETENCES

Candidates on completion of this course are expected to fulfill the following objectives (outcomes):

A. Knowledge (cognitive abilities)

The candidate is expected to gain a full range of cognitive abilities (familiarize, understand, retain, analyze, criticize, etc) in the following subjects.

B. Skills:

Candidates are expected to be able to demonstrate with professional competence of the following mental and manual skills.

1. Mastering a wide range of anatomical skills. – Human cadaveric dissection
2. Design a research protocol
3. Statistical analysis of the results
4. Applications of an understanding basic and clinical sciences as a basis for clinical thinking, problem solving, decision making, clinical reasoning and judgment.
5. Identification of the different structure of the human body.
6. Histology techniques
7. Histological identification of different tissues.
8. Communication skills.
9. Handling, sorting and retrieving informations.
10. Proper use of information sources such as scientific journals, computers, internet and web sites.

C. Competence

Able to carry out teaching work for UG'S (Medical & allied) & carry out research work. After completion of degree able to prepare and present scientific papers and pursue research.

COURSE CONTENT

THEORY

Gross Anatomy

General Anatomy:

1. Introduction to Anatomy
2. Cell Structure
3. Basic tissues
4. Intracellular substances
5. Blood
6. Cartilage – types
7. Bones
8. Joints – types subtypes and movement
9. Nerve tissues.

Upper Limb:

1. Bones of the upper limb
2. Superficial structures of the upper limb
   Cephalic vein
   Basilic vein
   Axillary Lymph nodes
   Dermatomes of upper limb
3. The breast/ mammary gland
4. Pectoral region

5. The axilla
6. Superficial muscles of the back
7. Scapular region
8. The Arm & cubital fossa
9. Forearm
10. Hand
11. Comprehensive survey of median, ulnar and radial nerves
12. Joints of the upper limb
13. Arteries of upper limb

Lower Limb:

1. Front of the thigh
2. Gluteal region
3. Back of the thigh
4. Popliteal fossa
5. Posterior crural region
6. Anterior crural region
7. Lateral crural region
8. Foot
9. Joints of the lower limb
10. Arches of the foot
11. Vessels of lower limb

Thorax:

1. Thoracic wall
2. Pleura
3. Lungs
4. Pericardium
5. Hear
6. Blood supply of heart
7. Mediastinum & Subdivision

8. Thoraco-abdominal diaphragm

Abdomen & pelvis :

1. Anterior Abdominal wall, including inguinal canal
2. Male genital organs including descent of tissues
3. Abdominal cavity & peritoneum
4. Stomach & spleen
5. Superior and Inferior mesenteric vessels, small and large intestine.
6. Duodenum, Pancreas and Portal vein
7. Liver & Gallbladder
8. Kidney, Ureter, Suprarenal
9. Posterior abdominal wall
10. Vessels and nerves of abdomen
11. Perineum, Anal and Urogenital and pouches, Ischiorectal fossa, Pudendal nerve and vessels.
12. Urinary bladder, Prostrate, Male Urethra
13. Uterus, Fallopian tube Vagina
14. Rectum and Anal canal
15. Muscles of pelvis, Pelvic diaphragm, Nerves & vessels of pelvis
16. Joints of pelvis and their movement

Head & Neck:

1. Scalp and Face
2. Deep cervical fascia, Posterior triangle
3. Suboccipital triangle
4. Anterior triangle, its subdivision and contents
5. Cranial cavity, Dural folds, Pituitary gland
6. Deep structures of Neck – Thyroid, Thymus, Subclavian vessels, Carotid artery, 9,10,11,12 Cranial nerves, Sympathetic trunk, Lymph nodes of Head & Neck
7. Prevertebral region
8. Orbit-contents

9. Parotid region & Facial nerve
10. Temporal and infra Temporal fossa and temporomandibular joint
11. Submandibular region (gland & muscles)
12. Mouth, pharynx, Tonsil, Soft palate
13. Nasal cavity – lateral wall, septum, Paranasal air sinuses, Pterygopalatine ganglion
14. Larynx
15. Tongue
16. Organ of hearing external middle ear, auditory tube 8th cranial nerve
17. Eyeball
18. Joints of neck

Neuroanatomy:

1. Central Nervous System: An Overview
2. Spinal Cord
3. Brainstem
4. Nuclei, Functional Components and Distribution of Cranial Nerves
5. Cerebellum and Fourth Ventricle
6. Diencephalon and Third Ventricle
7. Cerebrum
8. Basal Nuclei (Basal Ganglia)
9. White Matter of the Cerebrum
10. Somatic Motor and Sensory Pathways
11. Special Senses and their Neural Pathways
12. Reticular Formation and Limbic System
13. Autonomic Nervous System

Histology:

1. Epithelium - Simple and Compound
2. Glands – All types

3. Connective tissues – Fibres and cells
4. Cartilage – Hyaline, Elastic and White fibrous
5. Muscle – structure of smooth cardiac and skeletal muscle
6. Nervous tissue – Sensory & Automatic ganglia, peripheral nerve, optic Nerve
7. Circulatory system – Structure of large and medium sized vessels
8. Lymphoid tissue- Lymph nodes, Spleen, Thymus, Tonsil.
9. Integument system– Structure of thin and thick skin
10. Placenta and umbilical cord
11. Digestive system – Tongue, Esophagus, Stomach, Small intestine, Large intestine, appendix, Pancreas, Liver, Gall Bladder
12. Urinary system – kidney, Ureter, Urinary bladder, Urethra
13. Reproduction system Male -Testis, Stages of spermatogenesis, Epididydimis Vas deferens , Seminal vesicles, Penis, Prostrate.
14. Reproduction system female- fallopian tube, ovary and uterus
15. Eyeball, Retina Cornea, Sclero – corneal junction, structure of eyelids, Lacrimal gland
16. Respiratory system – Nasal cavity, Larynx, Trachea, Bronchi, Lungs
17. Endocrine system Structure of pituitary gland, Thyroid, Parathyroid, Suprarenal gland

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EMBRYOLOGY:

1. Germ cells – Male and female gametes, Spermatogenesis,Oveogensis.
2. Menstrual cycle
3. Formation of germ layers
4. Development of embryonic disc
5. Folding of the embryo
6. Placenta – Implantation, Decidua, Charonic, Villi Placental membrane, Placental circulation, Normal and abnormal sites of Implantation, Anomalies of placenta
7. Formation of tissues of the body – Epithelium, Mesenchyma, Connective tissue, cartilage, Bone – formation, ossification, growth of bone, Anomalies of bone.
8. Skin and its appendages – Skin, Hair, sebaceous glands, sweat glands, Anomalies of skin and its appendages, Mammary glands.
9. The Pharyngeal arches – Formation, Derivatives of skeletal elements, Nerves and muscles of arches, Fate of ectodermal clefts, Development of Thymus, Parathyroids, Thyroid gland and anomalies.
10. Development of face, nose, Palate, Anomalies
11. Development of Alimentary system
12. Development of Respiratory system
13. Development of Cardiovascular
14. Development of Urogenital System
15. Development of Eye, ear and Anomalies
16. Development of Nervous system
17. Development of skeletal system
18. Development of limbs

OSTEOLOGY:

1. Bones of the Upper limb - Scapula, clavicle, Humerus, Radius, Ulna, Carpal & Metacarpal, phalanges
2. Bones of lower limb - Hip bones, Femur, Tibia, Fibula, Tarsal Bones, Metatarsal, phalanges
3. Bones of Thorax - Sternum, Ribs, Thoracic Vertebrae
4. Abdomen-Lumbar Vertebrae, Hip bones, sacrum, bony pelvis
5. Bones of head and neck – Skull, Mandible Maxilla, Palatine, Zygomatic, Temporal, Sphenoid, Occipital, Parietal, Frontal, Hyoid bone and cervical Vertebrae

GENETICS

1. Chromosomes, Types, Nondisjunction
2. Nucleic acids gene, Replication & Transcription
3. Genetic code and Protein synthesis, Cistron, Muton and Recon
4. Mutation Types, causes & effects
5. Genetics disorders & Genetics of Hemoglobin

PRACTICAL

1. Demonstrate surface markings of important structures and organs.
2. Locate the subcutaneous positions of large veins.
3. Dissection and Demonstrations of the following :
    - Limbs: Dissection and Demonstrations of all the muscles, joints, blood vessels and nerves of the upper and lower limb
    - Thorax: Dissection : Chest wall, mediastinum, pleura, lungs, pericardium, heart.
    - Abdomen: Dissection : Anterior abdominal wall and inguinal region, external genitalia.Viscera nad Posterior Abdominal wall and nerve plexus.
    - Pelvis: Dissection : Pelvic viscera, blood vessels and nerves. Perineum including ischio – rectal fossa.
    - Head & Neck: Dissection : Superficial and deep dissection of face and neck, orbit and eye ball. Submandibular region temporal and infractemporal fossa, cranial cavity, naso and oropharyngeal regions. Ear, Larynx and pharynx.

4. **Neuroanatomy** -Gross specimen of full brain, meninges, spinal cord, prosected specimens to demonstrate visual system, auditory and vesibular pathways and major functional areas. Stained sections of brain and spinal cord at various levels to demonstrate cranial nerve nuclei, ascending and descending tracts, thalamic nuclei and important functional areas.
5. **Microscopic Anatomy** - Routine and special stained slides of all the tissues and organs of body.
6. **Embryology** -
    - Specimen and models depicting normal development of system:
    - Models to demonstrate various stages of early foetus and different organs development.
    - Slides of ovary and testis to show follicles and stages of maturation of spermatozoa

- Early chick and pig embryos to understand the development of tissues and organs from conception till term.

7. **Genetics** - Demonstration of common abnormal conditions including banding ; Pedigree chart, syndromes and their clinical phenotype. Demonstration of various new techniques such as FISH.

8. **Osteology and radiology** - Bones of all the regions of human body and concerned Radiological Anatomy

Teaching learning method

THEORY:

- A thorough knowledge of Medical Undergraduate syllabus in the subject by conducting tutorials, practicals for small group students
- Self-study from standard textbooks
- Prepare seminars on topics suggested by the HOD and present the same to the faculty members
- Presenting Journal Clubs for updating the recent advances
- Referring to old books/journals for history the subject

PRACTICALS:

- Learn to handle all equipment in the department both routine and sophisticated
- Learn to use Audio-Visual Aids, Power points for teaching purposes
- Perform all undergraduate practicals and demonstrations
- Maintain Practical Record, log book and work dairy

DISSERTATION:

The Candidate should draw a plan of the dissertation duly approved by the guiding teacher and submit it to the University 3 months before the final University Examination. Within 12 months from the date

of registration four copies of Final Dissertation should be submitted to the University three months prior to the examination

INTERNAL ASSESSMENT:

1. Regular periodic assessment shall be conducted throughout the course.
2. 3 sessional examination will be conducted in each year of the course
3. Average of the best 02 examinations will be considered for calculating the internal assessment

Formative Assessment

Types of assessment

a) Continuous assessment
b) Written: short and long essay, MCQ
c) Viva voce
d) Log book and work book.

2. Seminar presentations
3. Journal clubs
4. Presentation of a research protocol to solve a scientific problem.

SUMMATIVE ASSESSMENT

Distribution of Subjects & marks for final internal Assessment and University Examination for 3rd year.

Subject	Internal Assessment	University Exam
Gross Anatomy	100 – Theory	100 - Theory
Histology + Embryology, Genetics	100 – Theory	100 - Theory
Neuroanatomy	100 – Theory	100 – Theory

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UNIVERSITY EXAMINATION

Theory written	Theory I.A	Practical	Practical I.A	Viva voce	Total
Paper 1 - 100	25	100	25	50	500
Paper 11 – 100					
Paper III - 100					

Distribution & type of question and marks.

Type of Question	Number of Question	Marks for each Question
Long Essay	2 x 20	40
Short essay	6 x 10	60
TOTAL	100	

Declaration of marks in the final year exam

1. A candidate having appeared in all subjects in the same examination and passed that examination in the first attempt and secures 75% of marks or more of grand total marks prescribed will be declared to have passed the examination with distinction.

2. With the 65% or more but less than 75% is first class.
3. With the 50% or more but less than 65% is second class.
4. A candidate passing a University Examination in more than one attempt shall be placed in pass class irrespective of the percentage of marks secured by him/her in the Examination.

Final university examination (Practicals & viva)

Internal examiners – 02

External examiners - 02

Recommended Books and Journals - Latest editions.

Gross Anatomy

1. Susan Standring. Gray's, Anatomy- 39lh Edition, Elsevier 2005.
2. McMinn R.M.H. Last's, Anatomy - 8"1 Edition, ELBS, 1990.
3. Basmajain V.John and Slonecker E.Charles, Grants Method of Anatomy, 1 llh Edition., Williams and Wilkins 1939.
4. Hollinshed.W.Henry, Anatomy for Surgeon's - 4"' Edition, Harper and Raw Publishers. 1985.
5. Duplessis and GadeckerLecMcgiegor's, Synopsis of Surgical Anatomy -K.M.Varghese Company, 1986.
6. Snell.S.Richard, Clinical Anatomy for Medical Students - 5"' Edition, Little Brown and Company, 1985.
7. Grant Boileau. J.C., An Atlas of Anatomy - 5"' Edition, Williams and Willkins - 1984.
8. Graggs Hall E.C.B, Anatomy as a basis for Clinical Medicine - 2lld Edition. Williams and Williams, 1990.
9. Mc Minn M.H.Robert, Mc Minn's Functional and Clinical Anatomy- Is'Edition. Mosby Publications, 1995.
10. A.K.Datta, TextBook of Anatomy Vol. I, II &. III – 4th Edition, 1997 Current Books International.
11. Le Gross Clark, Tissues of the Body – 6 th Edition, 1980 Oxford University Press.
12. Keith & Moore, Clinically Oriented Anatomy – 3rd Edition, 1992 Williams & Wilkins.

II. Histology

1. Connack.H.David, Ham's Text Book of Histology - 9lh Edition, J.B.Lippincott Company, 1987.
2. Copenhaver M. Wilfred etal. Bailey's text book of Histology, 17"' Edition, William and Wilkins, 1978. .
3. Difiore. S.H. Mariano, Atlas of Human Histoogy – 5th Edition, Lea Febiger Publishers. 1985.
4. Jantiucira.C.Luis etal, Basic Histology - 2nd Edition, Large Medical Publication, 1971
5. Dmry R.A.B., Wullington E.A. Carlion's. .Histological Technique - 5"1 Edition, Oxford University, Preces, 1980.
6. Culliings, Histological Technique - 3rd Edition, 1994 Butterwoiths.
7. John D Bancroft, Manual of Histological Technique - 1st Edition, 1984 Churchil Livingstrone.
8. Michael H Ross, Histology - A Text & Atlas - 3"1 Edition. 1985 Williams & Wilkins.
9. Bloom and Fawcett, Text Book of Histology. W.B.Saunder's Company.

III. Embryology

1. Hamilton W.J. and Mossman H.W., Human Embryology - 4lh Edition, Williams and Wilkins Company, 1972.
2. Sadler T.W., Langman's Medical Embryology - 7lh Edition, Williams and Wilkins Company 1995.
3. A.K.Datta. Essentials of Human Anatomy, Human Embrylogy - 21"1 Edition, Current Books International, 1991.
4. Moore Persaud, The Developing Human - 7lh Edition, Eisevier 2003.

5. Larsen, Human Embryology - 2"a Edition, 1997, Churchil Livingstone

6. Langman, Medical embryology T W Sadur - 9"' edition 2004, Lippincott, Wililiams **&** Willkins.

IV. Neuro Anatomy

1. Everett N.B., Functinal Neuroanatomy, 6th Edition, Lee and Febigger, 1971.

2. Chusid. G.Joseph, Correlative Neuroanatomy and Functional Neurology – 16th Edition

3. Lange Medical Publication, 1976.

4. A.K.Datta, Neuroanatomy, - lsl Edition, Current Books International, 1997

5. Snell.S.Richard, Clinical Neuroanatomy for Medical Students, - 4"' Edition, Lippincott -Raven, 1982.

6. Parent Andre, Carpenter's Neuroanatomy - 9lh Edition, Williams and Wilkins, 1996.

7. Inderbir Singh, Neuroanatomy - 5"' Edition. 1997 Jaypeee Brothers Medical Publications

V. Human Genetics / Medical Genetics

1. Robert F Mueller, Emery's Elements of Medical Genetics - 9th Edition, 1995 Churchil Livingstone.

2. Nora & Frazer, Medical Genetics Principles - 1974 Lee & Gebiger. Philadelphia.

3. Friedman, NMS Genetics - 2nd Edition, 1996.

4. Alfred G Kudson Jr.. Genetics & Disease - Me Graw Hill Book Company N.Y.,

5. Thomas D. Gelehrtar, Principles of Medical Genetics - 2lld Edition, 1990 Williams & Wilkins

6. J.M.Conner M A Ferguson Smith - Essentials of Medical Genetics - Blackwell Scientific publications.

Physical Anthropology

1. Harrision, Human Biology an introduction to Human Evolution and Growth - 2''' Edition,1970.

2. Poirie. Fossil Man, 1973.

Embalming Techniques

1. Jayavelu T., Embalming Techniques, Churchil Livingston.
2. Ansari M.C., Embalming.
3. Embalming - Ajmani 1st edition 1998, J.P.Publishers.

Museum Techniques

1. Tompsett RH, Anatomical Techniques.
2. Edwards JJ, Medical Museum Techniques. Oxford University Press

Journals

1. Journal of Anatomical Society of India.
2. Journal of Anatomy.
3. Acta Anatomica.
4. American Journal of Anatomy.
5. American Journal of Physical Anthropology.
6. Journal of Morphology. Embryology
7. Anatomical Record
8. Americal Journal of Medical Genetics.
9. Annual Review of Genetics.

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Blueprint for the four theory papers

(Content weightage paper-wise)

PAPER – I : GROSS ANATOMY, APPLIED ANATOMY AND MORPHOLOGY

Sl. No		Type of questions	Marks	%
1.	Head & Neck	Long essay	20 marks	20%
2.	abdomen & pelvis	Long essay	20 marks	20%
3.	Upper limb	Short essays	10 marks	10%
4.	Lower limb	Short essays	10 marks	10%
5.	Thorax	Short essays	10 marks	10%
6.	Head & Neck	Short essays	10 marks	10%
7.	abdomen & pelvis	Short essays	10 marks	10%
8.	General anatomy/limbs	Short essays	10 marks	10%

PAPER – II: EMBRYOLOGY, HISTOLOGY AND GENETICS

Sl. No		Type Of Questions	Marks	
1	Histology - systemic	long essay	20 marks	20%
2	Embryology - systemic	long essay	20 marks	20%
3	Embryology - systemic	short essays	10 marks	10%
4	Genetics	short essays	10 marks	10%

5	Embryology - general	short essays	10 marks	10%
6	Histology - systemic	short essays	10 marks	10%
7	Histology - Systemic	Short Essays	10 marks	10%
8	Histology - General	short essays	10 marks	10%

PAPER – III: NEUROANATOMY AND RECENT ADVANCES

Sl. No		Type of questions	Marks	%
1	Cerebellum/cerebrum	long essay	20 marks	20%
2	Brainstem/ spinal cord	Long essay	20 marks	20%
3	Cerebrum	Short essays	10 marks	10%
4	Ventricle	Short essays	10 marks	10%
5	Nervous tissue (general)	Short essays	10 marks	10%
6	Cerebellum	Short essays	10 marks	10%
7	Recent advances	Short Essays	10 marks	10%
8	Body preservation	Short essays	10 marks	10%

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MODEL QUESTION FOR FINAL M.SC

YENEPOYA (DEEMED TO BE UNIVERSITY)

FINAL M.SC MEDICAL DEGREE EXAMINATION

PAPER - 1 GROSS ANATOMY, APPLIED ANATOMY AND MORPHOLOGY

QP CODE:

Exam date:

Time:

Your answer should be specific to the questions asked

Draw neat labeled diagrams whenever necessary

LONG ESSAYS **(2x20 = 40 marks)**

1. Describe stomach under the following headings
    1. Position and relations
    2. Blood supply
    3. Lymphatic drainage, applied anatomy
7. Describe the posterior triangle of the neck
    1. Boundaries
    2. Contents
    3. Applied anatomy

SHORT ESSAYS **(6x10=60 Marks)**

8. Radial nerve
9. Thoracic duct
10. Longitudinal arches of foot
11. Male urethra
12. Submandibular group of lymph nodes
13. Adductor magnus muscle.

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MODEL QUESTION FOR FINAL M.SC

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FINAL M.SC MEDICAL DEGREE EXAMINATION

PAPER - 1I - EMBRYOLOGY, HISTOLOGY AND GENETICS

QP CODE:

Exam date:

Time:

Your answer should be specific to the questions asked

Draw neat labeled diagrams whenever necessary

LONG ESSAYS **(2x20 = 40 marks)**

1. Microscopic anatomy of liver
2. Mesonephric duct and mesonephric duct

SHORT ESSAYS **(6x10=60 Marks)**

3. Midgut rotation
4. Genetic counseling
5. Trisomy
6. Primitive streak
7. Microscopic structure of pituitary gland
8. Microscopic structure compact bone

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MODEL QUESTION FOR FINAL M.SC

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FINAL M.SC MEDICAL DEGREE EXAMINATION

PAPER - III - NEUROANATOMY AND RECENT ADVANCES

QP CODE:

Exam date:

Time:

Your answer should be specific to the questions asked

Draw neat labeled diagrams whenever necessary

LONG ESSAYS **(2x20 = 40 marks)**

1. Describe the nuclei and connections of thalamus
2. Describe the external features and blood supply of spinal cord

SHORT ESSAYS **(6x10=60 Marks)**

3. Corpus callosum
4. Fourth ventricle
5. Neuron
6. Inferior cerebellar peduncle
7. Motor speech area
8. Embalming

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JOURNAL CLUB ASSESSMENT

Name of Student: ……..… Name of Faculty/ Observer:

Date: ……

Article Reference (Vancouver Style):

……..……

……

***Rating:** <2 (Below Expectations - B); 2-3 (Meets Expectations – M); 4 (Exceeds Expectations – E)

Sl.	Criteria					
	Article Selection (Importance/ Relevance)					
	Background Knowledge & Introduction of Topic					
	Critical analysis of: Title, Abstract & Introduction of the article as per stud design (checklist)*					
	Critical analysis of: Methodology & Results) of the article as per study design (checklist)*					
	Critical analysis of: Discussion, Limitation & Conclusion) of the article as per study design (checklist)*					
	Whether cross references have been consulted					
	Effective use of Audio-Visual Aids					
	Ability to respond to questions on the paper / subject					

.						

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Major Positive Feature

Suggestions for improvement of criteria where score is <2

Criteria with Score <2	**Comments**	
Agreed Action Plan	Resident's Signature	Assessor's Signature

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Annexure - 3

SEMINAR ASSESSMENT

Name of Student: ……..… Name of Faculty/

Observer: …… Date: …… Topic:

……

***Rating:** <2 (Below Expectations - B); 2-3 (Meets Expectations – M); 4 (Exceeds Expectations – E)

Sl No	Criteria	0	1	2	3	4
1.	Content					
2.	Presentation Skills					
3.	Understanding of Subject					
4.	Communication					
5.	Handling Questions					
6.	Use of Audio-Visual Aids					
7.	Time Management					
8.	References					
Major Positive Feature						

Suggestions for improvement of criteria where score is <2

Criteria with Score <2	Comments

Agreed Action Plan	Resident's Signature	Assessor's Signature

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POSTGRADUATE

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DEPARTMENT

OF

ANATOMY

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Postgraduate Log book

Name of the Department :

Name of the Student :

Postgraduate Degree :

Academic Years :

Name and Designation :

of the Guide

Signature of the student :

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CERTIFICATE

Certified that the content of this log book is a Bonafide work..... a postgraduate student in the **Department of Anatomy**, Yenepoya Medical College, Mangalore for this post graduation period.

Signature, Name and seal Of Guide	Signature, Name and seal of Professor & HOD	Signature, Name and seal of Dean

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6	Research	
7	Workshop/CME/Conference	
8	External Postings	

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Practical and Procedural skills

Sl. No.	Date	Topic	Remarks/ Signature

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Training skill in Research methodology

Sl. No.	Date	Topic	Remarks/ Signature

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UG - Teaching programmes: Theory Class/ Practical

Sl. No	Date	Topic	Remarks/ Signature

PG Teaching programme

Sl. No	Date	Topic	Remarks/ signature

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Seminars/ Journal clubs

Sl. No	Date	Topic presented/Attended	Remarks/ signature

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Research

Sl. No	Date	Topic	Remarks/ Signature

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Workshop/CME/Conference

Sl. No	Date	Topic	Remarks/ signature

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External postings

Sl. No	Date	Department	Remarks/ signature