



Gyanmanjari
Innovative University

Syllabus
Gyanmanjari Science College
Semester-3 (B.Sc.)

Subject: Anatomy and Histology of Male and Female Reproductive System- BSCIEM13312

Type of course: Multidisciplinary

Prerequisite:

Basic knowledge of cell biology, genetics, human physiology, and reproductive biology.

Rationale:

This course introduces key principles of clinical embryology, including gametogenesis, fertilization, early development, and assisted reproductive technologies (ART). It provides a foundation for understanding infertility treatments and prepares students for advanced study and careers in reproductive science.

Teaching and Examination Scheme

| Teaching Scheme | | | Credits | Examination Marks | | Total Marks |
|-----------------|---|---|---------|-------------------|-----|-------------|
| CI | T | P | C | SEE | CCE | |
| 4 | 0 | 0 | 4 | 100 | 100 | 200 |

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; SEE - Semester End Evaluation; LWA - Lab Work Assessment; V – Viva voce; CCE-Continuous and Comprehensive Evaluation; ALA- Active Learning Activities.



Course Content:

| Sr. No | Course Content | Hrs. | % Weig htag e | | | | | | | | | | | | | | | | |
|--------|---|------|---------------|--------------------|--------------------|-----|-----|---|---|--|----|----|--|----|--|----|---|----|--|
| 1 | <p>Introduction to anatomy</p> <ol style="list-style-type: none"> 1. Overview of the Reproductive System <ul style="list-style-type: none"> • Definition and importance of the reproductive system • Functions of the reproductive system • Role in human reproduction and hormone production 2. Basic Reproductive Terminology <ul style="list-style-type: none"> • Gamete and gonad • Fertilization and zygote • Puberty and conception 3. Components of the Reproductive System <ol style="list-style-type: none"> a. Male Reproductive System <ul style="list-style-type: none"> • External and internal reproductive organs • Primary functions b. Female Reproductive System <ul style="list-style-type: none"> • External and internal reproductive organs • Mammary gland • Primary functions | 18 | 20 | | | | | | | | | | | | | | | | |
| | <p>Evaluation method</p> | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Evaluation Methods</th> <th>SEE</th> <th>CCE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(ALA) Minor Project: Faculty will provide different topics for project preparation regarding anatomic structures and students have to prepare it. Photographs/Images with labelling need to be uploaded on GMJU web portal</td> <td></td> <td>10</td> </tr> <tr> <td>2.</td> <td>Anatomical Diagram: The faculty will provide the anatomical diagram, and students will explain its structure and functions.</td> <td>10</td> <td></td> </tr> <tr> <td>3.</td> <td>Conceptual Understanding of anatomy and terminology to students, short and long questions will be assigned, and they will answer it in descriptive form.</td> <td>10</td> <td></td> </tr> </tbody> </table> | | | Sr. No. | Evaluation Methods | SEE | CCE | 1 | (ALA) Minor Project: Faculty will provide different topics for project preparation regarding anatomic structures and students have to prepare it. Photographs/Images with labelling need to be uploaded on GMJU web portal | | 10 | 2. | Anatomical Diagram: The faculty will provide the anatomical diagram, and students will explain its structure and functions. | 10 | | 3. | Conceptual Understanding of anatomy and terminology to students, short and long questions will be assigned, and they will answer it in descriptive form. | 10 | |
| | Sr. No. | | | Evaluation Methods | SEE | CCE | | | | | | | | | | | | | |
| 1 | (ALA) Minor Project: Faculty will provide different topics for project preparation regarding anatomic structures and students have to prepare it. Photographs/Images with labelling need to be uploaded on GMJU web portal | | 10 | | | | | | | | | | | | | | | | |
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| | | | | | | |
|---|---|--|-----|-----|----|--|
| | 4. | Case-Based Learning (CBL): Students explain anatomical basis and implications through CBL and upload it in the GMIU portal. | | 10 | | |
| | | Total | 20 | 20 | | |
| 2 | Male reproductive system Structure and anatomy of: <ol style="list-style-type: none"> 1. External Genitalia <ul style="list-style-type: none"> • Penis: structure, parts, and functions • Scrotum: anatomy and functions 2. Testis <ul style="list-style-type: none"> • Location and external features • Internal structure • Functions 3. Epididymis <ul style="list-style-type: none"> • Parts (head, body, tail) • Structure and functions 4. Spermatic Cord <ul style="list-style-type: none"> • Extent and coverings • Contents • Functions 5. Vas Deferens <ul style="list-style-type: none"> • Course and relations • Structure • Functions 6. Seminal Vesicle <ul style="list-style-type: none"> • Location • Structure • Functions 7. Prostate Gland <ul style="list-style-type: none"> • Location and relations • Structure • Functions • Clinical significance (brief) | | | 18 | 20 | |
| | Evaluation method | | | | | |
| | Sr. No. | Evaluation Methods | SEE | CCE | | |
| | 1 | Anatomical Diagram-based questions: Students will explain its structure and function of diagram-based questions in their assignments and upload their work on the GMIU portal. | | 10 | | |



| | | | | | |
|---|---|---|-----------|-----------|----|
| | 2 | (ALA) Minor Project: Faculty will provide topics for project preparation and students have to prepare it. | 10 | | |
| | 3 | Identification of organs using models, charts, or preserved specimens. | 10 | | |
| | 4 | Case-Based Learning (CBL): Students explain anatomical basis and implications through CBL and upload it in the GMIU portal. | | 10 | |
| | | Total | 20 | 20 | |
| 3 | | <p>Female reproductive system Structure and anatomy of:</p> <ol style="list-style-type: none"> 1. External Genitalia (Vulva) <ul style="list-style-type: none"> • Components (mons pubis, labia majora, labia minora, clitoris, vestibule) • Structure • Functions 2. Ovary <ul style="list-style-type: none"> • Location and external features • Structure • Functions 3. Fallopian (Uterine) Tube <ul style="list-style-type: none"> • Parts (infundibulum, ampulla, isthmus, intramural part) • Structure • Functions 4. Uterus <ul style="list-style-type: none"> • Location and parts (fundus, body, isthmus, cervix) • Structure • Functions 5. Vagina <ul style="list-style-type: none"> • Location and relations • Structure • Functions 6. Mammary Gland <ul style="list-style-type: none"> • Location and external features • Structure (lobes, lobules, lactiferous ducts) • Functions • Clinical significance (brief) | | 18 | 20 |



| Evaluation method | | | |
|-------------------|--|-----|-----|
| Sr. No | Evaluation Methods | SEE | CCE |
| 1 | (ALA) Minor Project exam: Faculty will provide anatomical structure of organs and students have to explain its anatomical and physiological function with its diagram. | 10 | |
| 2 | Conceptual Understanding of anatomy and terminology to students, short and long questions will be assigned and students will answer the questions. | 10 | |
| 3 | Anatomical Diagram-based questions: Students will explain its structure and function of diagram-based questions in their assignments and will be uploaded on the GMIU web portal. | | 10 |
| 4 | Case-Based Learning (CBL): Students explain anatomical basis and implications through CBL and upload it in the GMIU portal. | | 10 |
| | Total | 20 | 20 |

| | | | |
|---|--|----|----|
| 4 | Urinary system Structure and Anatomy of: <ol style="list-style-type: none"> 1. Urinary bladder <ul style="list-style-type: none"> ● Structure ● Location and position ● External features (apex, body, fundus/base, neck) ● Internal features (trigone, mucosal folds) ● Relations 2. Blood Supply <ul style="list-style-type: none"> ● Arterial supply ● Venous drainage 3. Nerve Supply <ul style="list-style-type: none"> ● Sympathetic innervation ● Parasympathetic innervation ● Somatic innervation 4. Lymphatic Drainage <ul style="list-style-type: none"> ● Lymphatic vessels ● Regional lymph nodes | 18 | 20 |
|---|--|----|----|



| | <p>5. Applied Anatomy</p> <ul style="list-style-type: none"> • Urinary catheterization • Urinary tract infection (UTI) • Urinary retention and incontinence • Bladder stones (calculi) • Bladder carcinoma (brief overview) <p>Evaluation method:</p> <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Evaluation Methods</th> <th>SEE</th> <th>CCE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Conceptual Understanding of anatomy and terminology to students, short and long questions will be assigned, and the completed assignments will be uploaded on the GMJU web portal.</td> <td></td> <td>10</td> </tr> <tr> <td>2</td> <td>Diagrammatic Visualization -based questions: Students will explain its structure and function of diagram-based questions in their assignments.</td> <td>10</td> <td></td> </tr> <tr> <td>3</td> <td>(ALA) Minor Project: Faculty will provide anatomical structure of organs for project preparation and students have to prepare it.</td> <td>10</td> <td></td> </tr> <tr> <td>4</td> <td>Case-Based Learning (CBL): Students explain anatomical basis and implications through CBL and upload it in the GMJU portal.</td> <td></td> <td>10</td> </tr> <tr> <td></td> <td>Total</td> <td>20</td> <td>20</td> </tr> </tbody> </table> | Sr. No. | Evaluation Methods | SEE | CCE | 1 | Conceptual Understanding of anatomy and terminology to students, short and long questions will be assigned, and the completed assignments will be uploaded on the GMJU web portal. | | 10 | 2 | Diagrammatic Visualization -based questions: Students will explain its structure and function of diagram-based questions in their assignments. | 10 | | 3 | (ALA) Minor Project: Faculty will provide anatomical structure of organs for project preparation and students have to prepare it. | 10 | | 4 | Case-Based Learning (CBL): Students explain anatomical basis and implications through CBL and upload it in the GMJU portal. | | 10 | | Total | 20 | 20 | | |
|---------|---|---------|--------------------|-----|-----|---|---|--|----|---|---|----|--|---|--|----|--|---|--|--|----|--|--------------|----|----|--|--|
| Sr. No. | Evaluation Methods | SEE | CCE | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Conceptual Understanding of anatomy and terminology to students, short and long questions will be assigned, and the completed assignments will be uploaded on the GMJU web portal. | | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Diagrammatic Visualization -based questions: Students will explain its structure and function of diagram-based questions in their assignments. | 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | (ALA) Minor Project: Faculty will provide anatomical structure of organs for project preparation and students have to prepare it. | 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Case-Based Learning (CBL): Students explain anatomical basis and implications through CBL and upload it in the GMJU portal. | | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 20 | 20 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | <p>Endocrine system Structure and anatomy:</p> <ol style="list-style-type: none"> 1. Hypothalamus <ul style="list-style-type: none"> • Location and relations • Structure and major nuclei • Connections with the pituitary gland • Functions 2. Pituitary Gland <ul style="list-style-type: none"> • Location and relations • Parts (anterior and posterior lobes) • Structure • Functions 3. Thyroid Gland <ul style="list-style-type: none"> • Location • External features (lobes and isthmus) | 18 | 20 | | | | | | | | | | | | | | | | | | | | | | | | |



| | | | |
|--------------------------|---|-----------|-------------|
| | <ul style="list-style-type: none"> ● Internal structure ● Relations ● Functions <p>4. Suprarenal (Adrenal) Glands</p> <ul style="list-style-type: none"> ● Location and relations ● Structure (cortex and medulla) ● Blood supply (brief) ● Functions | | |
| Evaluation method | | | |
| Sr. No. | Evaluation Methods | SEE | CCE |
| 1. | Practical evaluation: Identification of endocrine glands using models, posters, charts, or specimens. | | 10 |
| 2. | Conceptual Understanding of anatomy and terminology to students, short and long questions will be assigned, and they will understand and analyze the questions and provide their respective answers. | 10 | |
| 3. | (ALA) Minor Project: Faculty will provide anatomical structure of organs for project preparation and students have to prepare it using photographs or images/ diagrammatic representation. | 10 | |
| 4. | Case-Based Learning (CBL): Students explain anatomical basis and implications through CBL and upload it in the GMIU portal. | | 10 |
| | Total | 20 | 20 |
| | | 90 | 100% |

| Distribution of Marks (Revised Bloom's Taxonomy) | | | | | | |
|---|-----------------|-------------------|-----------------|-------------|--------------|------------|
| Level | Remembrance (R) | Understanding (U) | Application (A) | Analyze (N) | Evaluate (E) | Create (C) |
| Weightage % | 20% | 30% | 20% | 10% | 20% | 00 |

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.



RUBRICS:**UNIT 1: Introduction to anatomy**

Conceptual understanding of anatomy and reproductive terminology: 5 marks

Clarity of gross anatomy and microscopic anatomy: 5 marks

Histological analysis of different tissues: 5 marks

Understanding the relationships between reproductive organs: 5 marks

UNIT 2: Male reproductive system

Understanding of all structures of male reproductive system: 5 marks

Explains functions of each structure and their role in reproduction: 5 marks

Complete and detailed description including structure, parts, and anatomical relations: 5 marks

Correctly applies knowledge to clinical scenarios: 5 marks

UNIT 3: Female reproductive system

Understanding of all structures of female reproductive system: 5 marks

Explains functions of each structure and their role in reproduction: 5 marks

Complete and detailed description including structure, parts, and anatomical relations: 5 marks

Correctly applies knowledge to clinical scenarios: 5 marks

UNIT 4: Urinary system

Understanding of all structures of urinary system: 5 marks

Explains functions of each structure and their role in reproduction: 5 marks

Complete and detailed description including structure, parts, and anatomical relations: 5 marks

Correctly applies knowledge to clinical scenarios: 5 marks

UNIT 5: Endocrine system

Understanding of all structures of endocrine system: 5 marks

Explains functions of each structure and their role in reproduction: 5 marks

Complete and detailed description including structure, parts, and anatomical relations: 5 marks

Correctly applies knowledge to clinical scenarios: 5 marks

Seminar: Evaluation based on

Quality and Design of PPT – 3 marks

Depth of Content Knowledge and Accuracy – 4 marks

Presentation Skills and Audience Interaction – 3 marks



Course Outcome

| | |
|-----|--|
| | After learning this course the students must be able to: |
| CO1 | Explain the basic concepts of anatomy, anatomical terminology, and the organization of the human reproductive system. |
| CO2 | Apply anatomical knowledge to identify and describe the structures and functions of the male reproductive system. |
| CO3 | Analyze the anatomical organization and functional relationships of the female reproductive system. |
| CO4 | Evaluate the anatomical features and clinical significance of the urinary bladder in common clinical conditions. |
| CO5 | Evaluate the anatomy and functional significance of the hypothalamus, pituitary, thyroid, and suprarenal glands in maintaining endocrine regulation. |

Instructional Method:

The course delivery method will depend upon the requirement of content and needs of students. The teacher, in addition to conventional teaching methods by black board, may also use any tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory.

The internal evaluation will be done on the basis of the Active Learning Assignment.

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in the laboratory.

Reference Books:

- 1) Moore, K. L., Dalley, A. F., & Agur, A. M. R. *Clinically Oriented Anatomy* (8th ed.). Wolters Kluwer.
- 2) Singh, V. *Textbook of Human Embryology*. Elsevier.
- 3) Sadler, T. W. *Langman's Medical Embryology* (15th ed.). Wolters Kluwer.
- 4) Chaurasia, B. D. *Human Anatomy* (Vol. 2 & 3, 9th ed.). CBS Publishers & Distributors.
- 5) Singh, I. *Human Anatomy* (Vol. 2 & 3, 6th ed.). Jaypee Brothers Medical Publishers.
- 6) Singh, V. *Textbook of Clinical Embryology* (3rd ed.). Elsevier.
- 7) Coward, K. *A Textbook of Clinical Embryology*. Cambridge University Press.

