



# BLDE UNIVERSITY

## Choice Based Credit System (CBCS)

### Revised Curriculum for M.Sc. Medical Anatomy 2016-17

Published by

**BLDE UNIVERSITY**

[Declared as Deemed to be University u/s 3 of UGC act, 1956, vide notification No.F.9-37/2007-U.3(A)]

The Constituent College

**SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH CENTRE**

Smt. Bangaramma Sajjan Campus, B. M. Patil Road (Sholapur Road), Vijayapura - 586103, Karnataka, India.

University: Phone: +918352-262770, Fax: +918352-263303, Website: [www.bldeuniversity.ac.in](http://www.bldeuniversity.ac.in), E-mail: [office@bldeuniversity.ac.in](mailto:office@bldeuniversity.ac.in) College:

Phone: +918352-262770, Fax: +918352-263019, E-mail: [bmpmc.principal@bldeuniversity.ac.in](mailto:bmpmc.principal@bldeuniversity.ac.in)



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[Declared as Deemed-to-be- University u/s 3 of UGC Act, 1956 vide Government of India notification No. F.9-37/2007-U.3(A)]

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**SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTRE**

BLDEU/REG/M.Sc.(Med)/2016-17/925

July 29, 2016

## NOTIFICATION

Sub: Revised Curriculum for M.Sc. Medical Programme in Anatomy,  
Physiology, Biochemistry and Microbiology with Semester based system.

Ref: 1. Minutes of the meeting of the 20<sup>th</sup> meeting of the Academic Council of  
the University held on April 29, 2016.

2. Minutes of the meeting of the 36<sup>th</sup> Meeting of Board of Management of  
the University held on June 18, 2016.

The Board of Management of the University is pleased to approve the Revised Curriculum for M.Sc. Medical in Anatomy, Physiology, Biochemistry and Microbiology following Choice Based Credit System (CBCS) with semester scheme in its 36<sup>th</sup> meeting held on June 18, 2016.

The Revised Curriculum for the **M.Sc. Medical Programmes** shall be effective from the Academic Session 2016-17 onwards, in the Constituent College of the University viz. Shri B. M. Patil Medical College, Hospital and Research Centre, Vijayapura.

REGISTRAR

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BLDE University, Vijayapura.

To,  
The Dean, Faculty of Medicine and Principal  
Shri B. M. Patil Medical College,  
Hospital and Research Centre,  
Vijayapura

Copy to:

- The Secretary, UGC, New Delhi
- The Vice-Principal
- The Medical Superintendent
- The Controller of Examinations
- The Prof. & HoDs of Pre, Para and Clinical Departments
- The Coordinator, IQAC
- PS to the Hon'ble Vice-Chancellor

Smt. Bangaramma Sajjan Campus, Dr.B.M.Patil Road (Solapur Road), Vijayapura-586103. Karnataka. India

University : Phone : +91 8352-262770, Fax : +91 8352-263303, Website : [www.bldeuniversity.ac.in](http://www.bldeuniversity.ac.in), E-mail : [office@bldeuniversity.ac.in](mailto:office@bldeuniversity.ac.in)  
College : Phone : +91 8352-262770, Fax : +91 8352-263019, Website : [www.bldeuniversity.ac.in](http://www.bldeuniversity.ac.in), E-mail : [bmpmc.principal@bldeuniversity.ac.in](mailto:bmpmc.principal@bldeuniversity.ac.in)

**Vision:**

- To be a Leader and be recognized as an Institution striving for maintenance and enhancement of Quality Medical Education and Healthcare”

**Mission:**

- To be committed to promote sustainable development of higher education including Health science education, consistent with the statutory and regulatory requirements.
- Reflect the needs of changing technology and make use of the academic autonomy to identify the academic programs that are dynamic.
- Adopt global concepts in education in the healthcare sector.

<b>SEMESTER-I</b>						
<b>Course Code.</b>	<b>Course Name</b>	<b>Cred its</b>	<b>Teaching hours</b>	<b>Marks</b>		
				<b>Internal Assessment</b>	<b>Semester Exam</b>	<b>Total</b>
<b>Theory</b>						
MANA 1.1	Medical Anatomy	4	4	20	60	80
MANA 1.2	Medical Physiology	4	4	20	60	80
MANA 1.3	Medical Biochemistry	4	4	20	60	80
MANA 1.4	Medical Pharmacology	4	4	20	60	80
MANA 1.5	Medical Microbiology	4	4	20	60	80
<b>Practical</b>						
MANA 1.1P	Medical Anatomy	1	2	20	50	70
MANA 1.2P	Medical Physiology	1	2	20	50	70
MANA 1.3P	Medical Biochemistry	1	2	20	50	70
MANA 1.4P	Medical Pharmacology	1	2	20	50	70
MANA 1.5P	Medical Microbiology	1	2	20	50	70
Total		25	30	200	550	750

<b>SEMESTER-II</b>						
<b>Course Code.</b>	<b>Course Name</b>	<b>Credits</b>	<b>Teaching hours</b>	<b>Marks</b>		
				<b>Internal Assessment</b>	<b>Semester Exam</b>	<b>Total</b>
<b>Theory</b>						
MANA 2.1	Medical Anatomy	4	4	20	60	80
MANA 2.2	Medical Physiology	4	4	20	60	80
MANA 2.3	Medical Biochemistry	4	4	20	60	80
MANA 2.4	Medical Pharmacology	4	4	20	60	80
MANA 2.5	Medical Microbiology	4	4	20	60	80
MANA 2.6	Research Methodology & Biostatistics (Core Course)	4	4	20	60	80
<b>Practical</b>						
MANA 2.1P	Medical Anatomy	1	2	20	50	70
MANA 2.2P	Medical Physiology	1	2	20	50	70
MANA 2.3P	Medical Biochemistry	1	2	20	50	70
MANA 2.4P	Medical Pharmacology	1	2	20	50	70
MANA 2.5P	Medical Microbiology	1	2	20	50	70
MANA 2.6P	Research Methodology & Biostatistics (Core Course)	1	2		50	70
Total		30	36	240	660	900

<b>SEMESTER-III</b>						
<b>Course Code.</b>	<b>Course Name</b>	<b>Credits</b>	<b>Teaching hours</b>	<b>Marks</b>		
				<b>Internal Assessment</b>	<b>Semester Exam</b>	<b>Total</b>
<b>Theory</b>						
MANA3.1	General Anatomy, General Histology, General Embryology, Upper limb, Thorax	4	4	20	60	80
Core Elective course**		4	4	Internal Exam 80 Marks		
MANA 3.2	Developmental Genetics					
MANA 3.3	Radiological Anatomy					
MANA 3.4	Surgical Anatomy					
MANA 3.5	Clinical Postings (Radiology, Surgery, Orthopaedics, FMT, Genetics )	6	18	50		50
MANA 3.6	Dissertation/Project Proposal*	5	10	50	-	50
MANA 3.7	Seminar, Microteaching, Journal club presentation	2	2	50		50
<b>Practical</b>						
MANA 3.1P	General Anatomy, General Histology, General Embryology, Upper limb, Thorax	2	4	20	50	70
Core Elective practical		1	2	Internal Exam 70 Marks		
MANA 3.2P	Developmental Genetics/					
MANA 3.3P	Radiological Anatomy/					
MANA 3.4P	Surgical Anatomy					
	Total	24	44	190	110	300

SEMESTER-IV						
Course Code.	Course Name	Credits	Teaching hours	Marks		
				Internal Assessment	Semester Exam	Total
<b>Theory</b>						
MANA 4.1	Abdomen and Pelvis, Lower limb with systemic histology and embryology, Genetics	4	4	20	60	80
General elective **		4	4			
MANA 4.3	Bioethics, Biosafety, IPR & Technology Transfer	Internal Exam of 80 Marks				
MANA 4.4	Disaster Management and Mitigation Resources					
MANA 4.5	Human rights					
MANA 4.6	Clinical Postings (Radiology, Surgery, Orthopaedics, FMT, Genetics )	7	21	50		50
MANA 4.7	Dissertation / Project*	5	10	50		50
MANA 4.8	Seminar, Microteaching, Journal club presentation	2	2	50		50
<b>Practical</b>						
MANA 4.1P	Abdomen and Pelvis, Lower limb with systemic histology and embryology, Genetics	2	4	20	50	70
Total		24	45	190	110	300

SEMESTER -V						
Course Code.	Course Name	Credits	Teaching hours	Marks		
				Internal Assessment	Semester Exam	Total
<b>Theory</b>						
MANA 5.1	Head, Face and Neck, NeuroAnatomy with Systemic histology and Embryology	4	4	20	60	80
MANA 5.2	Clinical Postings (Radiology, Surgery, Orthopaedics, FMT, Genetics )	6	18	50		50
MANA 5.3	Dissertation / Project*	12	24	50		50
<b>Practical</b>						
MANA 5.1P	Head, Face and Neck, Neuro Anatomy with Systemic histology and Embryology	1	2	20	50	70
Total		23	46	140	110	250

<b>SEMESTER-VI</b>						
<b>Course Code.</b>	<b>Course Name</b>	<b>Credits</b>	<b>Teaching hours</b>	<b>Marks</b>		
				<b>Internal Assessment</b>	<b>Semester Exam</b>	<b>Total</b>
<b>Theory</b>						
MANA 6.1	Gross Anatomy, Histology and Embryology, Neuro anatomy and Genetics	4	4	20	60	80
MANA 6.2	Clinical Postings (Radiology, Surgery, Orthopaedics, FMT, Genetics )	6	18	50		50
MANA 6.3	Dissertation / Project*	12	24		100	100
<b>Practical</b>						
MANA 6.1P	Gross Anatomy, Histology and Embryology, Neuro anatomy and Genetics	2	4	20	50	70
	<b>Total</b>	<b>24</b>	<b>50</b>	<b>90</b>	<b>210</b>	<b>300</b>

## Annexure G – IV Outline of course curriculum MSc-Medical Courses

SEMESTER -I													
Code No.	Course Name	Hrs/week					Hrs/semester				Exam Marks		
		Lecture/week	Tutorial/week	Practical hrs/week	Total Hrs/Week	Total Credits/week	Lecture/semester	Tutorial/semester	Practical/semester	Total hours	IA	semester Exams	Total marks
<b>Theory</b>													
MANA 11	Anatomy	3	1		4	4	45	15		60	20	60	80
MANA 12	Physiology	3	1		4	4	45	15		60	20	60	80
MANA 13	Biochemistry	3	1		4	4	45	15		60	20	60	80
MANA 14	Pharmacology	3	1		4	4	45	15		60	20	60	80
MANA 15	Microbiology	3	1		4	4	45	15		60	20	60	80
<b>Practical</b>													
MANA 11P	Anatomy			2	2	1			30	30	20	50	70
MANA 12P	Physiology			2	2	1			30	30	20	50	70
MANA 13P	Biochemistry			2	2	1			30	30	20	50	70
MANA 14P	Pharmacology			2	2	1			30	30	20	50	70
MANA 15P	Microbiology			2	2	1			30	30	20	50	70
	Total					25			450				750

Total Marks for IA	
Theory	Practical
20	20

Theory Internal Assessment	
Theory	15
Seminar	5
Total	20

Practical Internal Assessment	
Practical	15
Journal	5
Total	20



SEMESTER-II													
Code No.	Course Name	Hrs/week					Hrs/semester				Exam Marks		
		Lecture/week	Tutorial/week	Practical hrs/week	Total Hrs/Week	Total Credits/Week	Lecture/semester	Tutorial/semester	Practical/semester	Total hours	IA	semester Exam	Total marks
<b>Theory</b>													
MANA 21	Anatomy	3	1		4	4	45	15		60	20	60	80
MANA 22	Physiology	3	1		4	4	45	15		60	20	60	80
MANA 23	Biochemistry	3	1		4	4	45	15		60	20	60	80
MANA 24	Pharmacology	3	1		4	4	45	15		60	20	60	80
MANA 25	Microbiology	3	1		4	4	45	15		60	20	60	80
MANA 26	Research Methodology & Biostatistics	4			4	4	60			60	20	60	80
<b>Practical</b>													
MANA 21P	Anatomy			2	2	1			30	30	20	50	70
MANA 22P	Physiology			2	2	1			30	30	20	50	70
MANA 23P	Biochemistry			2	2	1			30	30	20	50	70
MANA 24P	Pharmacology			2	2	1			30	30	20	50	70
MANA 25P	Microbiology			2	2	1			30	30	20	50	70
MANA 26P	Research Methodology & Biostatistics			2	2	1			30	30	20	50	70
	Total					30				540			900

Total Marks for IA	
Theory	Practical
20	20

Theory Internal Assessment	
Theory	15
Seminar	5
Total	20

Practical Internal Assessment	
Practical	15
Journal	5
Total	20

## Rules and Regulations of Curriculum

### M.Sc. Medical Anatomy

#### Definitions of Key Words:

1. **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year. Choice Based Credit System (CBCS).
2. The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skill courses).
3. **Course:** Usually referred to, as “papers” is a component of a programme. All courses need not carry the same weight. The courses should define learning objectives and learning outcomes. A course may be designed to comprise lectures/ tutorials/ laboratory work/ outreach activities/ project work/ viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these.
4. **Credit Based Semester System (CBSS):** Under the CBSS, the requirement for awarding a degree or diploma or certificate is prescribed in terms of number of credits to be completed by the students.
5. **Credit:** A unit by which the course work is interpreted. It functions the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week.
6. **Cumulative Grade Point Average (CGPA):** It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the sum total of the credit points obtained by the student in various courses in all semesters and the sum of the total credits of all courses in all the semesters.
7. **Grade Point:** It is a numerical marking allotted to each letter grade on a 10-point scale.
8. **Letter Grade:** It is an appreciated point of the student’s performance in a selected course. Grades are denoted by letters O, A+, A, B, C and RA x. Programme: An educational programme leading to award of a Degree certificate.
9. **Semester Grade Point Average (SGPA):** It is index of performance of all performance of work in a semester. Its total credit points obtained by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.

10. **Semester:** Each semester will consist of minimum of 180 working days. The odd semester may be scheduled from June/ July to December and even semester from December/ January to June.

**Duration of Study:**

The duration of the study for M.Sc. Medical Anatomy will be of 3 years.

**Program pattern:**

- First Semester: July
- Second Semester: January
- Third Semester: July
- Fourth Semester: January
- Fifth Semester- July
- Sixth Semester-January

**Eligibility Criteria:**

A candidate seeking admission into this course shall have one of the following qualifications

- a) B.Sc. Degree with life sciences as one of the optional
- b) M.B.B.S.

Any of the following bachelor degree passing with not less than II class

- c) B.Sc. graduates of biological Sciences.
- d) B.Sc. Zoology/Microbiology/Botany/Physiology
- e) Other health sciences
- f) BHMS
- g) BAMS

**Medium of Instruction:**

English shall be the Medium of Instruction for all the Subjects of study and for examinations.

**CBCS – Definition and benefits:** Choice Based Credit System is a flexible system of learning. The distinguishing features of CBCS are the following:

- It permits students to learn at their own pace.
- The electives are selected from a wide range of elective courses offered by the other University Departments.
- Undergo additional courses and acquire more than the required number of credits.
- Adopt an inter-disciplinary and intra-disciplinary approach in learning.
- Make best use of the available expertise of the faculty across the departments or disciplines
- Has an inbuilt evaluation system to assess the analytical and creativity skills of students in addition to the conventional domain knowledge assessment pattern.

**Semester System and Choice Based Credit System:**

The semester system initiates the teaching-learning process and screws longitudinal and latitudinal mobility of students in learning. The credit based semester system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system provides a sun shone" type approach in which the students can take choice of courses, learn and adopt an interdisciplinary approach of learning.

**Semesters:**

**An academic year consists of two semesters:**

	<b>PG</b>
Odd Semester 1 <sup>st</sup> semester	July – December
Odd Semester 3 <sup>rd</sup> , 5 <sup>th</sup> semesters	
Even Semester 2 <sup>nd</sup> , 4 <sup>th</sup> , 6 <sup>th</sup> semesters	December - June

**Credits:**

Credit defines the coefficient of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/ tutorial laboratory work and other forms of learning required, to complete the course contents in a 15-20 week schedule:

- a. **1 credit** = 1 hour of lecture per week
- b. **3 credits** = 3 hours of instruction per week
- ✓ Credits will be assigned on the basis of the lectures (L) / tutorials (T) / Clinical Training (CR) / laboratory work (P) / Research Project (RP) and other forms of learning in a 15- 20 week schedule L - One credit for one hour lecture per week
- c. **P/T** - One credit for every two hours of laboratory or practical
- d. **CR** - One credit for every three hours of Clinical training/Clinical rotation/posting
- e. **RP** - One credit for every two hours of Research Project per week – Max Credit 20- 25

	<b>Lecture - L</b>	<b>Tutorial - T</b>	<b>Practical - P</b>	<b>Clinical Training/ Rotation– CT/CR</b>	<b>Research Project– RP*</b>
1 Credit	1 Hour	2 Hours	2 Hours	3 Hours	2 Hours
RP*	Maximum Credit 20 – 25 / Semester				

**Types of Courses:** Courses in a programme may be of three kinds:

- **Core Course**
- **Elective Course**
- **Ability Enhancement Compulsory Courses**

**Core Course:** A course, which should compulsorily be studied by a candidate as a basic requirement is termed as a Core course. There may be a Core Course in every semester. This is the course which is to be compulsorily studied by a student as a basic requirement to complete programme of respective study.

**Elective Course:** A course which can be chosen from a very specific or advanced the subject of study or which provides an extended scope or which enables an exposure to some other domain or expertise the candidates ability is called an Elective Course.

**Discipline Specific Elective (DSE) Course:** Elective courses offered by the main subject of study are referred to as Discipline Specific Elective. The University / Institute may also offer discipline related Elective courses of interdisciplinary nature. An elective may be “Discipline Specific Electives (DSE)” gazing on those courses which add intellectual efficiency to the students.

**Dissertation / Project:** An Elective/Core course designed to acquire special / advanced knowledge, such as supplement study / support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher / faculty member is called dissertation / project.

**Generic Elective (GE) Course:** An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective. P.S.: A core course offered in a discipline / subject may be treated as an elective by other discipline / subject and vice versa and such electives may also be referred to as Generic Elective.

**Ability Enhancement Compulsory Courses:** The Ability Enhancement (AE) Courses may be of two kinds: Ability Enhancement Compulsory Courses (AECC) and Skill Enhancement Courses (SEC).

“AECC” courses are the courses based upon the content that leads to Knowledge enhancement (i) Environmental Science and (ii) English/MIL Communication. These are mandatory for all disciplines.

**Assigning Credit Hours per Course:** While there is flexibility for the departments in allocation of credits to various courses offered, the general formula would be:

- All core course should be restricted to a maximum of 4 credits.
- All electives should be restricted to a maximum of 3 credits.
- All ability enhancement course should be restricted to a maximum of 2 credits.
- Projects should be restricted to a maximum of 20-25 credits.

## Rules and Regulation for Examination of M.Sc. Medical Anatomy under CBCS Pattern

1. **Title of the Programme offered:** M.Sc. Medical Anatomy
2. **Duration of the Programme:** Three years.
3. **Medium of instruction:** The medium of instruction and examination shall be in English
4. **Letter Grades and Grade Points:**

Adopted the UGC recommended system of awarding grades and CGPA under Choice Based Credit Semester System.

- 4.1 Would be following the absolute grading system, where the marks are compounded to grades based on pre-determined class intervals.
- 4.2 The UGC recommended 10-point grading system with the following letter grades will be followed:

**Table 1: Grades and Grade Points:**

Letter Grade	Grade Point
O (Outstanding)	10
A+ ( Excellent)	9
A (Very Good)	8
B (Good)	7
C (Above Average)	6
F (Fail)/ RA (Reappear)	0
Ab ( Absent)	0
Not Completed (NC)	0
RC (<50% in attendance or in Internal Assessment)	

- 4.3 A student obtaining Grade F/RA will be considered failed and will require reappearing in the examination.
- 4.4 Candidates with NC grading are those detained in a course (s); while RC indicate student not fulfilling the minimum criteria for academic progress or less than 50% attendance or less than 50% in internal assessments (IA). Registrations of such students for the respective courses shall be treated as cancelled. If the course is a core course, the candidate has to re-register and repeat the course when it is offered next time.

## 5. CBCS Grading System - Marks Equivalence Table

5.1 Table 2: Grades and Grade Points

Letter Grade	Grade	% of Marks
O (Outstanding)	10	86-100
A+ (Excellent)	9	70-85
A (Very Good)	8	60 -69
B (Good)	7	55 -59
C (Above Average) – <b>Passing criteria for M.Sc. Medical Anatomy</b>	6	50- 54
F (Fail) )/ RA (Reappear)	0	Less than 50
Ab (Absent)	0	-
NC- not completed	0	-
RC- Repeat the Course	0	0

5.2 Table 3: Cumulative Grades and Grade Points

Letter Grade	Grade Point	CGPA
O (Outstanding)	10	9.01 - 10.00
A+ ( Excellent)	9	8.01 – 9.00
A (Very Good)	8	7.01 – 8.00
B (Good)	7	6.00 - 7.00
C (Above Average)	6	5.01 - 6.00

**6. Assessment of a Course:** Evaluation for a course shall be done on a continuous basis. Uniform procedure will be adopted under the CBCS to conduct internal assessments (IA), followed by one end-semester university examination (ES) for each course.

6.1 For all category of courses offered (Theory, Practical, Discipline Specific Elective [DE] ; Generic Elective [GE] and Ability Enhancement Courses [AE]; Skills Enhancement Courses [SE] Theory or P (Practical) & RP( Research Project), assessment will comprise of Internal Assessment (IA) in the form of continuous comprehensive evaluation and mid-semester exam, end-semester (ES) examination or college exam as applicable.

6.2 Courses in programs wherein Theory and Practical/Clinical are assessed jointly. The minimum passing head has to be 50% Grade each for theory and practical's separately. RA grade in any one of the components will amount to reappearing in both components. i.e. theory and practical.

6.3 Evaluation for a course with clinical rotation or clinical training will be done on a continuous basis.



**7. Eligibility to appear for the end-semester examinations for a course includes:**

- 7.1 Candidates having  $\geq 75\%$  attendance and obtaining the minimum 40% in internal assessment in each course to qualify for appearing in the end-semester university examinations.
- 7.2 The students desirous of appearing for university examination shall submit the application form duly filled along with the prescribed examination fee.
- 7.3 Incomplete application forms or application forms submitted without prescribed fee or application form submitted after due date will be rejected and student shall not be allowed to appear for examination.

**8. Passing Heads**

- 8.1 Courses where theory and practical are involved, the minimum passing head shall be 50% in total including the internal assessment.
- 8.2 Elective subjects – the minimum prescribed marks for a pass in elective subject should be 50%. The marks obtained in elective subjects should be communicated to the university before the commencement of the university examination.

**9 Detention:** A student not meeting any of the above criteria may be detained (NC) in that particular course for the semester. In the subsequent semester, such a candidate requires improvement in all, including attendance and/or IA minimum to become eligible for the next end-semester examination.

**10** The maximum duration for completing the program will be 6 years (minimum duration of program x 2) i.e. (3x2) = 6 years, failing which his/her registration will be cancelled. Full fees of entire program of 3 years may be liable to be paid by the students.

**11 Carry over benefit:**

- 11.1 A student will be allowed to keep term for Semester II irrespective of number of heads of failure in Semester I.
- 11.2 A student will be allowed to keep term for Semester III if she/he passes each Semester I and II OR fails in not more than 2 courses each in semester I and II.
- 11.3 Student will be allowed to keep term for Semester IV irrespective of number of heads of failure in Semester III. However, student must mandatorily have passed each course of Semester I and II in order to appear for Semester IV exam.
- 11.4 Student will be allowed to keep term for Semester V, if she/he passes Semester I, II, III and IV OR has passed in all courses of Semester I and II and fails in not more than two courses each of Semester III and IV.
- 11.5 Student will be allowed to keep term for Semester VI, irrespective of number of heads of failure in Semester V. However, student must mandatorily have passed each course of Semester I, II, III and IV in order to appear for Semester VI exam.

## 12 Grace Marks for PG Courses:

- 121 A student shall be eligible for grace marks, provided he/she appeared in all the papers prescribed for the examination.
- 122 Maximum up to 5 grace marks may be allowed for passing, spread over between subjects.
- 123 No grace marks will be awarded in internal evaluation.

## 13 University End-Semester Examinations

- 13.1 There will be one final university examination at the end of every semester.
- 13.2 A student must have minimum 75% attendance (Irrespective of the type of absence) in theory and practical in each subject to be eligible for appearing the University examination.
- 13.3 The Principal / Director shall send to the university a certificate of completion of required attendance and other requirements of the applicant as prescribed by the university, two weeks before the date of commencement of the written examination.
- 13.4 A student shall be eligible to sit for the examination only, if she / he secure a minimum of 40% in internal assessment (individually in theory and practical as applicable). Internal examinations will be conducted at college/ department level.
- 13.5 Notwithstanding any circumstances, a deficiency of attendance at lectures or practical maximum to the extent of 10% - may be condoned by the Principal / Director.
- 13.6 If a student fails either in theory or in practical, he/ she have to re-appear for both.
- 13.7 There shall be no provision of re-evaluation of answer sheets. Student may apply to the university following due procedure for recounting of theory marks in the presence of the subject experts.
- 13.8 Internal assessment shall be submitted by the Head of the Department to the University through Dean at least two weeks before commencement of University theory examination.

**14. Supplementary examination:** The supplementary examination will be held in the next semester. Eligibility to appear for supplementary examination will be as per rule number 11.1-11.5.

## 15. Re-Verification

There shall be provision of re-totaling of the answer sheets; candidate shall be permitted to apply for recounting/re-totaling of theory papers within 8 days from the date of declaration of results.

**16. Scheme of University Exam Theory PG Program:** General structure / patterns for setting up question papers for Theory / Practical courses, for PG program are given in the following tables. Changes may be incorporated as per requirements of specific courses.

**Dissertation work:**

During the course of study every candidate has to prepare a dissertation work on a selected topic under the guidance of a recognized post-graduate teacher. The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.

Every candidate shall submit to the Registrar (Academics) of the University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within six months from the date of commencement of the II year on or before the dates notified by the University. The synopsis shall be sent through the proper channel. Such synopsis will be reviewed and the dissertation topic will be registered by the University. No change in the dissertation topic or guide shall be made without prior approval of the University.

**The dissertation should be written under the following headings**

1. Introduction
2. Aims or Objectives of study
3. Review of Literature
4. Material and Methods
5. Results
6. Discussion
7. Conclusion
8. Summary
9. References
10. Tables
11. Annexure

Six copies of dissertation thus prepared shall be submitted to the Controller of Examinations six months before final examination on or before the dates notified by the University.

The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.

A Co-guide may be included provided the work requires substantial contribution from a sister department or from another medical institution recognized for teaching/training. The co-guide shall be a recognized post graduate teacher of the University.

Change of guide: In the event of a registered guide leaving the college for any reason or in any other event, guide may be changed with prior permission from the university.

**18. Eligibility for award of degree**

18.1 A candidate shall have passed in all the subjects of all semester's I-VI, submitted research project report to be eligible for award of M.Sc. Medical Anatomy degree.

The performance of a candidate in a course will be indicated as a letter grade, whereas grade point will indicate the position of the candidate in that batch of candidates. A student is considered to have completed a course successfully and earned the prescribed credits if he/she secures a letter grade other than F/RA. A letter grade RA in any course implies he/she has to Re-appear for the examination to complete the course.

18.2 The RA grade once awarded in the grade card of the student is not deleted even when he/she completes the course successfully later. The grade acquired later by the student will be indicated in the grade sheet of the subsequent semester in which the candidate has appeared for clearance in supplementary exams

18.3 If a student secures RA grade in the Project Work/Dissertation, he/she shall improve it and resubmit it, if it involves only rewriting / incorporating the revisions suggested by the evaluators. If the assessment indicates lack of student performance or data collection then the student maybe permitted to re-register by paying the prescribed re-registration fee and complete the same in the subsequent semesters.

A candidate shall be declared to have passed the examination if he/she obtains the following minimum qualifying grade / marks:-

- (a) For Core courses CT (Core Theory), CL (Core Lab), DE (Discipline centric Electives), clinical rotation shall obtain Grade B (50 % of marks) in the University End Semester Examination (ES) and in aggregate in each course which includes both Internal Assessment and End Semester Examination.
- (b) For Generic Electives (GE), Ability Enhancement (AE) and Skill Enhancement (SE) courses student shall obtain Grade D (40 % of marks) in the College Examination.

**Computation of SGPA and CGPA**

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

- i. The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone & earned by a student, i.e.,

$$\text{SGPA (Si)} = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

Where  $C_i$  is the number of credits of the  $i$ th course and  $G_i$  is the grade point scored by the student in the  $i$ th course.

- ii. The CGPA is also calculated in the same manner taking into account all the courses

undergone & earned by a student over all the semesters of a programme, i.e.

$$CGPA = \frac{\sum(C_i \times S_i)}{\sum C_i}$$

Where  $S_i$  is the SGPA of the  $i$ th semester and  $C_i$  is the total number of credits in that semester.

- iii. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

#### Illustration of Computation of SGPA and CGPA

Course	Credit	Grade Letter	Grade Point	Credit Point (Credit x Grade)
Course 1	3	A	8	3 X 8 = 24
Course 2	4	B+	7	4 X 7 = 28
Course 3	3	B	6	3 X 6 = 18
Course 4	3	O	10	3 X 10 = 30
Course 5	3	C	5	3 X 5 = 15
Course 6	4	B	6	4 X 6 = 24
	20			139

**Illustration for SGPA**  
Thus,  $SGPA = 139/20 = 6.95$

Semester 1	Semester 2	Semester 3	Semester 4
Credit : 20 SGPA : 6.9	Credit : 22 SGPA : 6.8	Credit : 25 SGPA : 6.6	Credit : 26 SGPA : 6.0
Semester 5	Semester 6		
Credit : 26 SGPA : 6.3	Credit : 25 SGPA : 8.0		

**Illustration for CGPA**

Thus,

$$20 \times 6.9 + 22 \times 6.8 + 25 \times 6.6 + 26 \times 6.0 + 26 \times 6.3 + 25 \times 8.0$$

$$CGPA = \frac{\quad}{\quad} = 6.75/B+$$

144

- ii. Transcript: Based on the above recommendations on Letter grades, grade points and SGPA and CGPA, the transcript for each semester and a consolidated transcript indicating the performance in all semesters may be issued.

## Course Registration

17.1. After admission to a Program, a student identity number is generated .This PRN number may be used in the process of registration for a course.

17.2 The registration process is a registration for the courses in a semester. The registration card is generated after a student completes the choice of electives. Every student shall register for the stipulated number of Courses/Credits semester wise even if electives are not prescribed in their regulations for the said semester. Every student must register for Elective/Ability Enhancement Courses semester-wise for the courses he/she intends to undergo in that semester within two weeks of commencement of the semester.

The list of students registered for each elective will be communicated to the HoDs/ Course Chairpersons. Students will be requested to authenticate the chosen electives by appending their signature in acceptance with approval by the HoDs/ Course Chairpersons. A soft copy of the registered students will be submitted to the elective course offering departments for their official use.

### Re - Entry after Break of Study:

The University regulations for readmission are applicable for a candidate seeking re-entry to a program.

- a) Students admitted the program and absenting for more than 3 months must seek readmission into the appropriate semester as per university norms.
- b) The student shall follow the syllabus in vogue (currently approved / is being followed) for the program.
- c) All re-admissions of students are subject to the approval of the Vice-Chancellor.

### Ranking

The first two ranks of the programme will be decided on the basis of grades of CGPA in the courses (core and DE courses only). In case of a tie, marks % [of core and DE courses only] will be taken into account.

### Classification of Successful Candidates

Overall Performance in a Program and Ranking of a candidate is in accordance with the University regulations.

Consolidated Grade Card – M.Sc. Medical Anatomy			
Letter Grade	% Marks Range	Grade point	CGPA RANGE
O	80 & Above	10	9.01 – 10
A+	75-80	9	8.01 - 9.00
A	60-74	8	7.01 - 8.00
B+	55-59	7	6.01- 7.00
B	50-54	6	5.01- 6.00
F/RA (Reappear)	Less than 50	0	4.51 – 5.00
Ab (Absent)		0	
Not Completed (NC)		0	
Repeat the course (RC = <50% in attendance or Internal Assessment)		0	

#### A successful candidate will be:

- i. Who secures not less than O grade with a CGPA of 9.01 – 10.00 shall be declared to have secured ‘OUTSTANDING’ provided he/she passes the whole examination in the FIRST ATTEMPT;
- ii. Who secures not less than A+ grade with a CGPA of 8.01 – 9.00 shall be declared to have secured ‘EXCELLENT’ provided he/she passes the whole examination in the FIRST ATTEMPT;
- iii. Who secures not less than A grade with a CGPA of 7.01 –8.00 and completes the course within the stipulated course period shall be declared to have passed the examinations with ‘Very Good’
- iv. All other candidates (with grade B and above) shall be declared to have passed the examinations.

## **SYLLABUS**

**Hours dedicated for every week: 6 (Theory: 4 Practical: 2)**

### **Course Objective (Teaching Objectives):**

- To teach basic Anatomical concepts related to General Anatomy, General histology, General Embryology and Musculoskeletal system

### **Course Outcomes (learning Objectives):**

- To understand the basic anatomical concepts of General Anatomy
- To understand the basic anatomical concepts of General Histology
- To understand the basic anatomical concepts of General Embryology
- To understand the basic anatomical concepts of Muscular System
- To understand the basic anatomical concepts of Skeletal System



Unit no.	Theory Topics	Hours allotted No. of- hrs																
1.	<p><b>General Anatomy</b></p> <table border="1" data-bbox="215 353 1273 1632"> <thead> <tr> <th data-bbox="215 353 427 434">Name of the Subunit</th> <th data-bbox="427 353 1273 434">Topics covered under each subunit</th> </tr> </thead> <tbody> <tr> <td data-bbox="215 434 427 607">1.1 Terminology</td> <td data-bbox="427 434 1273 607">General anatomy includes introduction to anatomy, Terminology related to anatomy, Different anatomical planes and subdivisions</td> </tr> <tr> <td data-bbox="215 607 427 719">1.2 Bone</td> <td data-bbox="427 607 1273 719">Skeleton system with classification, types of bone, features of long bone, ossification, blood supply</td> </tr> <tr> <td data-bbox="215 719 427 869">1.3 Joints</td> <td data-bbox="427 719 1273 869">General classification with examples, structure of typical synovial joints, Classification of synovial joint with examples, Fibrous joints, Cartilaginous joints, Nomenclature</td> </tr> <tr> <td data-bbox="215 869 427 1128">1.4 Muscles</td> <td data-bbox="427 869 1273 1128">General features of muscles, classification with examples, types of skeletal muscles, Structures associated with muscle, Cardiac muscle and Smooth muscle, Functions, Naming of muscles</td> </tr> <tr> <td data-bbox="215 1128 427 1294">1.5 Cardiovascular system</td> <td data-bbox="427 1128 1273 1294">Types of circulations, Classification of blood vessels, Anastomosis, Collateral circulation, End arteries, Vasa vasorum</td> </tr> <tr> <td data-bbox="215 1294 427 1469">1.6 Nervous System</td> <td data-bbox="427 1294 1273 1469">Subdivisions of nervous system, Spinal cord and spinal segments, nerve fibers and myelination, Autonomic nervous system</td> </tr> <tr> <td data-bbox="215 1469 427 1632">1.7 Integumentary System</td> <td data-bbox="427 1469 1273 1632">Introduction to skin and fascia, Skin components and layers, types of skin, Fascia, Appendages of skin, Functions</td> </tr> </tbody> </table>	Name of the Subunit	Topics covered under each subunit	1.1 Terminology	General anatomy includes introduction to anatomy, Terminology related to anatomy, Different anatomical planes and subdivisions	1.2 Bone	Skeleton system with classification, types of bone, features of long bone, ossification, blood supply	1.3 Joints	General classification with examples, structure of typical synovial joints, Classification of synovial joint with examples, Fibrous joints, Cartilaginous joints, Nomenclature	1.4 Muscles	General features of muscles, classification with examples, types of skeletal muscles, Structures associated with muscle, Cardiac muscle and Smooth muscle, Functions, Naming of muscles	1.5 Cardiovascular system	Types of circulations, Classification of blood vessels, Anastomosis, Collateral circulation, End arteries, Vasa vasorum	1.6 Nervous System	Subdivisions of nervous system, Spinal cord and spinal segments, nerve fibers and myelination, Autonomic nervous system	1.7 Integumentary System	Introduction to skin and fascia, Skin components and layers, types of skin, Fascia, Appendages of skin, Functions	7 hrs
Name of the Subunit	Topics covered under each subunit																	
1.1 Terminology	General anatomy includes introduction to anatomy, Terminology related to anatomy, Different anatomical planes and subdivisions																	
1.2 Bone	Skeleton system with classification, types of bone, features of long bone, ossification, blood supply																	
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1.7 Integumentary System	Introduction to skin and fascia, Skin components and layers, types of skin, Fascia, Appendages of skin, Functions																	

2.	<b>General Histology</b>		<b>6 hrs</b>
Name of the Subunit	Topics covered under each subunit		
2.1 Epithelium and glandular tissue	Classification of epithelia, Simple epithelium and types, Stratified epithelium and types, Goblet cells, Transitional epithelium, Basement membrane, Surface projections and junctions, Classification of glandular tissue with suitable examples		
2.2 Connective tissue	Components of connective tissue, Fibres, Ground substance, Cells of connective tissue, Loose connective tissue, Dense connective tissue, Adipose tissue		
2.3 Skeletal system	Classification of cartilage with examples, Composition of Cartilage and bone, Cells of bone, Bone matrix, Microscopic anatomy of bones		
2.4 Muscular system	Microscopic structure of skeletal muscle, cardiac muscle and smooth muscle, Differences between the muscle structures		
2.5 Cardiovascular system and nervous system	Microscopic structure of Medium sized artery, Elastic artery, Vein, Structure of neuron, neuroglia, peripheral nerve, Ganglia		
2.6 Lymphoid system	Cells of lymphoid system, Lymphatic vessels, Microscopic structure of lymphnode, thymus, spleen and tonsil		

3.	<p><b>Unit:3 General Embryology:</b></p> <table border="1" data-bbox="215 257 1281 1249"> <thead> <tr> <th data-bbox="215 257 470 369">Name of the Subunit</th> <th data-bbox="470 257 1281 369">Topics covered under each subunit</th> </tr> </thead> <tbody> <tr> <td data-bbox="215 369 470 510">3.1 Introduction to Embryology and cell cycles</td> <td data-bbox="470 369 1281 510">Basic terminology, Stages of human development, Cell Cycle, Cell division – Mitosis and Meiosis, related abnormalities</td> </tr> <tr> <td data-bbox="215 510 470 616">3.2 Gametogenesis</td> <td data-bbox="470 510 1281 616">Primordial germ cells, Spermatogenesis, Spermiogenesis, Oogenesis</td> </tr> <tr> <td data-bbox="215 616 470 743">3.3 Female reproductive Cycles</td> <td data-bbox="470 616 1281 743">Ovarian cycle, Structure of Ovum, Changes in Menstrual cycle, Strata of endometrium</td> </tr> <tr> <td data-bbox="215 743 470 817">3.4 Fertilization</td> <td data-bbox="470 743 1281 817">Definition, Stages of fertilization, Effects of fertilization</td> </tr> <tr> <td data-bbox="215 817 470 936">3.5 First week of development</td> <td data-bbox="470 817 1281 936">Cleavage division, blastocyst, Implantation, Normal and abnormal sites of implantation and related applied embryology</td> </tr> <tr> <td data-bbox="215 936 470 1041">3.6 Second week of development</td> <td data-bbox="470 936 1281 1041">Formation of 2 germ layers, Yolk sac, Chorion and amnion</td> </tr> <tr> <td data-bbox="215 1041 470 1160">3.7 Third week of development</td> <td data-bbox="470 1041 1281 1160">Gastrulation, Notochord, Neurulation, Folding of embryo</td> </tr> <tr> <td data-bbox="215 1160 470 1249">3.8 Placenta</td> <td data-bbox="470 1160 1281 1249">Fetal membranes, Chorionic villi, Placenta formation, functions of placenta, Umbilical cord</td> </tr> </tbody> </table>	Name of the Subunit	Topics covered under each subunit	3.1 Introduction to Embryology and cell cycles	Basic terminology, Stages of human development, Cell Cycle, Cell division – Mitosis and Meiosis, related abnormalities	3.2 Gametogenesis	Primordial germ cells, Spermatogenesis, Spermiogenesis, Oogenesis	3.3 Female reproductive Cycles	Ovarian cycle, Structure of Ovum, Changes in Menstrual cycle, Strata of endometrium	3.4 Fertilization	Definition, Stages of fertilization, Effects of fertilization	3.5 First week of development	Cleavage division, blastocyst, Implantation, Normal and abnormal sites of implantation and related applied embryology	3.6 Second week of development	Formation of 2 germ layers, Yolk sac, Chorion and amnion	3.7 Third week of development	Gastrulation, Notochord, Neurulation, Folding of embryo	3.8 Placenta	Fetal membranes, Chorionic villi, Placenta formation, functions of placenta, Umbilical cord	<b>7 hrs</b>
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3.1 Introduction to Embryology and cell cycles	Basic terminology, Stages of human development, Cell Cycle, Cell division – Mitosis and Meiosis, related abnormalities																			
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3.8 Placenta	Fetal membranes, Chorionic villi, Placenta formation, functions of placenta, Umbilical cord																			

4.	<b>Unit:4 Muscular system:</b>		25 hrs
	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	
	4.1 Muscles of upper limb	Muscles of Pectoral region, muscles of arm, Axilla, spaces of axilla, Cubital fossa , muscles of forearm, intrinsic muscles of palm, flexor and extensor retinacula, carpal tunnel and syndrome, Brachial plexus and related nerves	
	4.2 Muscles of lower limb	Femoral triangle, Front of the thigh, Adductor canal, gluteal region, Hamstrings, Popliteal fossa, Muscles of leg, Arches of foot, Nerve supply to lower limb – Femoral nerve, Obturator nerve and Sciatic nerve, Blood supply to lower limb	
	4.3 Muscles of Abdomen	Muscles of anterior abdominal wall, Inguinal canal and hernia, Diaphragm, Muscles of posterior abdominal wall	
	4.4 Muscles of head and neck	Muscles of scalp and face, Muscles of mastication, Posterior triangle, Anterior triangle, Sternocleidomastoid, Trapezius , Related nerve supply	
4.5 Muscles of thoracic cage	Intercostal space, Intercostal muscles, respiratory movements		
5.	<b>Unit:5 Skeletal System:</b>		15
<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>		
5.1 Bones of Head and neck	Norma verticalis, Norma Basalis, Norma Occipitalis, Norma Lateralis, Interior of skull, Mandible		
5.2 Vertebral column	Curvatures of vertebral column, General features of vertebrae, Typical and atypical vertebrae, intervertebral disc		
5.3 Thoracic bones	Sternum, Classification of ribs, General features of typical rib, 1st, 2nd, 10th, 11th and 12th rib features		
5.4 Upper limb skeleton	Clavicle, Scapula, Humerus, Shoulder joint, Elbow joint, Radius, Ulna, Radioulnar joints, Wrist joint, Bones of hand		
5.5 Lower limb skeleton	Hip bone, Femur, Hip joint, Knee joint, Tibia, Fibula, Ankle joint, Bones of foot		
<b>Total</b>			<b>60 hrs</b>

<b>Unit no.</b>	<b>Practical Topics</b>	<b>Hours allotted No. of---hrs</b>
<b>1.</b>	General Anatomy <ul style="list-style-type: none"> <li>• Bone</li> <li>• Joints</li> </ul>	<b>1 hr</b>
<b>2.</b>	<b>General Histology</b> <ul style="list-style-type: none"> <li>• Epithelium</li> <li>• Connective tissue</li> <li>• Cartilage and Bone</li> <li>• Muscular tissue</li> <li>• Vascular tissue</li> <li>• Skin and fascia</li> <li>• Lymphoid Tissue</li> <li>• Nervous tissue</li> </ul>	<b>6 hrs</b>
<b>3.</b>	<b>General Embryology</b> <ul style="list-style-type: none"> <li>• Gametes and Gametogenesis</li> <li>• Cleavage and blastulation</li> <li>• Implantation and Abnormal sites of Implantation</li> <li>• Formation and derivatives of three germ layers</li> <li>• Notochord formation and Neurulation</li> <li>• Folding of embryo</li> <li>• Placenta</li> </ul>	<b>3 hrs</b>
<b>4.</b>	<b>Muscular system</b> <ul style="list-style-type: none"> <li>• Muscles of pectoral region</li> <li>• Muscles of Arm and Cubital fossa</li> <li>• Muscles of forearm</li> <li>• Muscles of palm</li> <li>• Muscles of thigh</li> <li>• Muscles of popliteal fossa and Gluteal region</li> <li>• Muscles of leg</li> <li>• Muscles of foot</li> <li>• Muscles of Thorax</li> <li>• Muscles of abdominal wall</li> <li>• Muscles of head and neck region</li> </ul>	<b>10 hrs</b>
<b>5.</b>	<b>Skeletal System</b> <ul style="list-style-type: none"> <li>• Bones of Upperlimb</li> <li>• Bones of Lowerlimb</li> <li>• Joints of upperlimb</li> <li>• Joints of lowerlimb</li> <li>• Vertebral column</li> <li>• Bones of thoracic cage</li> <li>• Skull and Mandible</li> </ul>	<b>10 hrs</b>
	<b>Total</b>	<b>30 hrs</b>

**Reference Books:**

1. B D Chaurasia Vol-1,2 and 3
2. Vishram Singh Vol-1,2,and 3
3. General Anatomy-B.D.Chaurasia
4. General Histology – Krishna Garg
5. General Embryology – Inderbir Singh

## **SYLLABUS**

**Hours dedicated for every week: 6 (Theory: 4 Practical: 2)**

### **Course Objective (Teaching Objectives):**

- To teach basic Anatomical concepts related to Respiratory system, Cardiovascular system, Gastrointestinal system, Genitourinary system, Endocrine system, Nervous system.

### **Course Outcomes (learning Objectives):**

- To understand the basic anatomical concepts of Respiratory system
- To understand the basic anatomical concepts of Cardiovascular system
- To understand the basic anatomical concepts of Gastrointestinal system
- To understand the basic anatomical concepts of Genitourinary system
- To understand the basic anatomical concepts of Endocrine system
- To understand the basic anatomical concepts of Nervous system

<b>Unit no.</b>	<b>Theory Topics</b>	<b>Hours allotted No.of-hrs</b>																		
<b>1.</b>	<p><b>Respiratory System</b></p> <table border="1"> <thead> <tr> <th data-bbox="252 427 523 499"><b>Name of the Subunit</b></th> <th data-bbox="523 427 1358 499"><b>Topics covered under each subunit</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="252 499 523 611">1.1 Nose and Nasal Cavities</td> <td data-bbox="523 499 1358 611">General anatomy of Nose, Nasal Septum, Lateral wall of the Nose</td> </tr> <tr> <td data-bbox="252 611 523 723">1.2 Larynx</td> <td data-bbox="523 611 1358 723">Gross features of larynx, Cartilages of larynx, Muscles of larynx, Blood and Nerve supply of larynx</td> </tr> <tr> <td data-bbox="252 723 523 784">1.3 Trachea</td> <td data-bbox="523 723 1358 784">Trachea features, Tracheobronchial tree</td> </tr> <tr> <td data-bbox="252 784 523 918">1.4 Bronchopulmonary Segments</td> <td data-bbox="523 784 1358 918">Features, Segments of Right and Left lung, Blood Supply to segments</td> </tr> <tr> <td data-bbox="252 918 523 1030">1.5 Pleura</td> <td data-bbox="523 918 1358 1030">Types of pleura, Pleural cavity, Extensions and relations, Blood and Nerve supply</td> </tr> <tr> <td data-bbox="252 1030 523 1120">1.6 Lungs</td> <td data-bbox="523 1030 1358 1120">Gross features, Lobes and fissures, Surfaces and relations, Blood and nerve supply</td> </tr> <tr> <td data-bbox="252 1120 523 1209">1.7 Mediastinum</td> <td data-bbox="523 1120 1358 1209">Divisions of Mediastinum, Contents of Mediastinum, Thoracic duct, Azygous venous systems.</td> </tr> <tr> <td data-bbox="252 1209 523 1429">1.8 Diaphragm</td> <td data-bbox="523 1209 1358 1429">Gross features, Surfaces and relations, Parts and Openings, Clinical features related to Diaphragm, Blood and nerve supply, Functions and Actions of Diaphragm</td> </tr> </tbody> </table>	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	1.1 Nose and Nasal Cavities	General anatomy of Nose, Nasal Septum, Lateral wall of the Nose	1.2 Larynx	Gross features of larynx, Cartilages of larynx, Muscles of larynx, Blood and Nerve supply of larynx	1.3 Trachea	Trachea features, Tracheobronchial tree	1.4 Bronchopulmonary Segments	Features, Segments of Right and Left lung, Blood Supply to segments	1.5 Pleura	Types of pleura, Pleural cavity, Extensions and relations, Blood and Nerve supply	1.6 Lungs	Gross features, Lobes and fissures, Surfaces and relations, Blood and nerve supply	1.7 Mediastinum	Divisions of Mediastinum, Contents of Mediastinum, Thoracic duct, Azygous venous systems.	1.8 Diaphragm	Gross features, Surfaces and relations, Parts and Openings, Clinical features related to Diaphragm, Blood and nerve supply, Functions and Actions of Diaphragm	<b>12 hrs</b>
<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>																			
1.1 Nose and Nasal Cavities	General anatomy of Nose, Nasal Septum, Lateral wall of the Nose																			
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1.7 Mediastinum	Divisions of Mediastinum, Contents of Mediastinum, Thoracic duct, Azygous venous systems.																			
1.8 Diaphragm	Gross features, Surfaces and relations, Parts and Openings, Clinical features related to Diaphragm, Blood and nerve supply, Functions and Actions of Diaphragm																			
<b>2.</b>	<p><b>Cardiovascular System</b></p> <table border="1"> <thead> <tr> <th data-bbox="252 1480 523 1552"><b>Name of the Subunit</b></th> <th data-bbox="523 1480 1358 1552"><b>Topics covered under each subunit</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="252 1552 523 1664">2.1 Pericardium</td> <td data-bbox="523 1552 1358 1664">Parts and divisions of pericardium, Sinuses of pericardium, Blood and nerve supply of pericardium</td> </tr> <tr> <td data-bbox="252 1664 523 1776">2.2 Heart</td> <td data-bbox="523 1664 1358 1776">External features, Internal features of heart with right atrium in detail, Coronary circulation, Nerve supply of heart</td> </tr> <tr> <td data-bbox="252 1776 523 1888">2.3 Major vessels related to heart</td> <td data-bbox="523 1776 1358 1888">Aorta in detail, Superior and Inferior vena cava, Pulmonary vessels</td> </tr> </tbody> </table>	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	2.1 Pericardium	Parts and divisions of pericardium, Sinuses of pericardium, Blood and nerve supply of pericardium	2.2 Heart	External features, Internal features of heart with right atrium in detail, Coronary circulation, Nerve supply of heart	2.3 Major vessels related to heart	Aorta in detail, Superior and Inferior vena cava, Pulmonary vessels	<b>6hrs</b>										
<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>																			
2.1 Pericardium	Parts and divisions of pericardium, Sinuses of pericardium, Blood and nerve supply of pericardium																			
2.2 Heart	External features, Internal features of heart with right atrium in detail, Coronary circulation, Nerve supply of heart																			
2.3 Major vessels related to heart	Aorta in detail, Superior and Inferior vena cava, Pulmonary vessels																			

3.	<b>Unit:3 Gastrointestinal System:</b>		<b>16 hrs</b>
	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	
	3.1 Tongue	Gross features, Divisions, Muscles of tongue, Blood Supply, Nerve Supply in detail.	
	3.2 Soft Palate	Gross features, Muscles of soft palate, Blood and nerve supply of soft palate	
	3.3 Pharynx	Gross features, Subdivisions, Features of Naso pharynx, Features of Oropharynx, Features of Laryngo Pharynx, Muscles of Pharynx, Blood and Nerve Supply.	
	3.4 Peritoneum	Divisions, Peritoneal reflections, Peritoneal Folds, Lesser Sac	
	3.5 Oesophagus and Stomach	Oesophageal -divisions, Muscles, Constrictions, Blood and nerve supply. Stomach – Gross features, Surfaces and relations, Interior, Blood and Nerve Supply	
	3.6 Small Intestine	Duodenum- Features, divisions, Interior, relations, Blood and nerve supply, General features of Jejunum and Ileum, Differences between each part of small intestine.	
	3.7 Large intestine	Features, divisions, Ceacum in detail, Appendix in detail, Blood supply, Differences between small and large intestine.	
	3.8 Rectum and Anal Canal	Rectum – Features, Interior, Folds, Blood supply and Nerve supply, Anal canal – Features, Muscles, Interior, Clinical Anatomy.	
	3.9 Liver and Extra hepatic biliary apparatus (EHBA)	Liver – gross features, Segments, lobes, Surfaces and relations, Porta hepatis, Blood supply, EHBA – Gall bladder, Cystic duct, Bileducts	
	3.10 Pancreas	Gross features, Surfaces and relations, Blood supply and Applied anatomy	
	3.11 Spleen	Gross features, Surfaces and relations, Blood supply and Applied anatomy	
	3.12 Abdominal Aorta	Features, Branches and relations	



4.	<b>Unit:4 Genitourinary system:</b>		<b>10 hrs</b>
	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	
	4.1 Kidney	Gross features, Surfaces and relations, Interior, Blood supply, Applied Anatomy	
	4.2 Ureter and Urinary Bladder	Ureter - Gross features, Extensions and divisions, Constrictions, Blood supply, Applied Anatomy, Urinary Bladder - Gross features, Surfaces and relations, Interior, Blood supply, Applied Anatomy	
	4.3 Male reproductive system	Testis – Gross features, Surfaces and coverings, Relations, Interior, Blood supply, Applied Anatomy, Epididymis, Vas deferens, Prostrate, and External genitalia of Male.	
	4.4 Female Reproductive System	Uterus – Gross features, Surfaces and relations, Supports of uterus, Interior and Blood supply. Ovaries – Surfaces, relations, Blood supply, Fallopian tubes – parts, relations, blood supply	
	4.5 Urethra	Male And Female urethra – Extension, parts, relations, interior, applied.	
5.	<b>Unit:5 Endocrine System:</b>		<b>3 hrs</b>
	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	
	5.1 Thyroid Gland and Parathyroids	Gross features of thyroid gland, coverings, Surfaces and relations, blood supply, Applied anatomy and Parathyroids	
	5.2 Pituitary Gland	Gross features, Parts and divisions, Relations, Composition, Blood supply and Functions	
	5.3 Suprarenal Gland	Gross features, Coverings, Relations, Blood supply	
6.	<b>Unit:6 Nervous System:</b>		<b>13 hrs</b>
	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	
	6.1 Meninges and Dural Venous Sinuses	Meninges, Dural folds, Dural venous sinuses- Classification, Cavernous sinus in detail	
	6.2 Spinal Cord	External features, Parts and divisions, Section of spinal cord showing ascending and descending tracts, Spinal nerves, Blood supply	
	6.3 Brain Stem	External features of medulla, Pons and Midbrain, Fourth ventricle	
	6.4 Cerebellum	Gross features, Lobes and fissures, surfaces and relations, Blood supply and Applied Anatomy	
	6.5 Cerebrum	Sulci and Gyri, Functional areas of brain, White matter of the brain, Lateral ventricle, Third ventricle, Blood supply of brain	
	6.6 Cranial nerves	Cranial nerves – I-XII, Facial nerve in detail, Hypoglossal nerve in detail, Trigeminal nerve in detail.	
<b>Total</b>		<b>60 hrs</b>	

<b>Unit no.</b>	<b>Practical Topics</b>	<b>Hours allotted No.of--hrs</b>
<b>1.</b>	<b>Respiratory System</b> <ul style="list-style-type: none"> <li>• Sagittal section of HFN</li> <li>• Larynx and Trachea</li> <li>• Lung</li> <li>• Bones of thorax</li> <li>• Structures in Mediastinum</li> <li>• Paranasal Air Sinuses</li> </ul>	<b>5 hrs</b>
<b>2.</b>	<b>Cardiovascular System</b> <ul style="list-style-type: none"> <li>• Exterior of heart</li> <li>• Interior of heart</li> <li>• Major vessels related to heart</li> </ul>	<b>3 hrs</b>
<b>3.</b>	<b>Gastrointestinal System</b> <ul style="list-style-type: none"> <li>• Sagittal section of HFN</li> <li>• Stomach</li> <li>• Small Intestine</li> <li>• Large intestine with differences</li> <li>• Liver</li> <li>• Spleen</li> <li>• Pancreas</li> </ul>	<b>6 hrs</b>
<b>4.</b>	<b>Genitourinary system</b> <ul style="list-style-type: none"> <li>• Kidney</li> <li>• Ureter, Urinary bladder</li> <li>• Prostate and Seminal vesicles</li> <li>• Testis</li> <li>• Uterus</li> <li>• Fallopian tubes and Ovary</li> <li>• Sagittal section of male and female pelvis</li> <li>• Bones- male and female pelvis</li> <li>• Lumbar vertebrae</li> </ul>	<b>8 hrs</b>
<b>5.</b>	<b>Endocrine System</b> <ul style="list-style-type: none"> <li>• Thyroid gland and relations in neck</li> </ul>	<b>1 hrs</b>
<b>6.</b>	<b>Nervous System</b> <ul style="list-style-type: none"> <li>• Spinal Cord</li> <li>• Brain stem</li> <li>• Cerebellum</li> <li>• Cerebrum</li> <li>• Ventricles</li> <li>• Sections of brain</li> </ul>	<b>7 hrs</b>
	<b>Total</b>	<b>30 hrs</b>

**Reference Books:**

1. B D Chaurasia Vol-1,2 and 3
2. Vishram Singh Vol-1,2,and 3
3. NeuroAnatomy-InderbirSing

BLDE UNIVERSITY			
M. Sc. Medical Students			
Syllabus for Research Methodology and Biostatistics			
		No. of Hours	
		Theory	Practical
<b>I. Research Methodology:</b>			
<b>Scientific Methods of Research :</b> Definition of Research, Assumptions, Operations and Aims of Scientific Research. Research Process, Significance and Criteria of Good Research , Research Methods versus Methodology, Different Steps in Writing Report, Technique of Interpretation, Precaution in interpretation, Significance of Report Writing, Layout of the Research Report		5	—
<b>Research Designs:</b> Prospective, retrospective, Observational Studies: Descriptive, explanatory, and exploratory, Experimental Studies: Pre-test design, post-test design, Follow-up or longitudinal design, Cohort Studies, Case Control Studies, Cross sectional studies, Intervention studies, Panel Studies.		5	—
<b>Sampling Designs :</b> Census and Sample Survey, Implications of a Sample Design, Steps in Sampling Design Criteria of Selecting a Sampling Procedure, Characteristics of a Good Sample Design, Different Types of Sample Designs (Probability sampling and non probability sampling), How to Select a Random Sample?, Systematic sampling, Stratified sampling, Cluster sampling, Area sampling, Multi-stage sampling, Sampling with probability proportional to size, Sequential sampling.		4	0
<b>Measurement in research:</b> Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Technique of Developing Measurement Tools, Scaling Meaning of Scaling, Scale Classification Bases, Important Scaling Techniques, Scale Construction Techniques, Possible sources of error in measurement, Tests of sound measurement		5	5
<b>Methods of Data Collection:</b> Types of data, Collection of Primary Data, Observation Method, Interview Method, Collection of Primary Data		3	0
<b>Ethics and Ethical practice in research and plagiarism</b>		1	
<b>Sampling Fundamentals :</b> Need and importance for Sampling, Central Limit Theorem, Sampling Theory, Concept of Standard Error, Estimation, Estimating the Population Mean Estimating Population Proportion, Sample Size and its Determination, Determination of Sample Size through the Approach Based on Precision Rate and Confidence Level.		5	2

<b>II. Biostatistics</b>		
<b>Data Presentation</b> : Types of numerical data: Nominal, Ordinal, Ranked, Discrete and continuous. Tables: Frequency distributions, Relative frequency, Graph: Bar charts, Histograms, Frequency polygons, one way scatter plots, Box plots, two way scatter plots, line graphs	3	3
<b>Measures of Central Tendency and Dispersion</b> : Mean, Median, Mode Range, Inter quartile range, variance and Standard Deviation, Coefficient of variation, grouped mean and grouped standard deviation (including merits and demerits).	3	3
<b>Testing of Hypotheses:</b> Definition, Basic Concepts, Procedure for Hypothesis Testing, Normal distribution, data transformation Important Parametric Tests, Hypothesis Testing of Means, Hypothesis Testing for Differences between Means, Hypothesis Testing for Comparing Two Related Samples, Hypothesis Testing of Proportions, Hypothesis Testing for Difference between Proportions, Testing the Equality of Variances of Two Normal Populations.	6	6
<b>Chi-square Test:</b> Chi-square as a Non-parametric Test, Conditions for the Application Chi-square test, Steps Involved in Applying Chi-square Test, Alternative Formula, Yates' Correction, and Coefficient by Contingency.	2	2
<b>Measures of Relationship:</b> Need and meaning, Correlation and Simple Regression Analysis	2	2
<b>Analysis of Variance and Covariance:</b> Analysis of Variance (ANOVA): Concept and technique of ANOVA, One-way ANOVA, Two-way ANOVA, ANOVA in Latin-Square Design Analysis of Co-variance (ANOCOVA), ANOCOVA Technique.	4	4
<b>Nonparametric or Distribution-free Tests:</b> Important Nonparametric or Distribution-free Test Sign test, Wilcoxon signed-Rank Test, Wilcoxon Rank Sum Test: Mann-Whitney U test Kruskal Walli's test, Friedman's test, and Spearman Correlation test.	3	3
<b>Vital Health Statistics:</b> Measurement of Population: rate, crude rate, specific rate, <i>Measurement of fertility:</i> specific fertility rate, Total fertility rate, <i>Reproduction rate,</i> Gross Reproduction Rate, Net Reproduction Rate, Measures related to mortality: Crude Death Rate (CDR) , Age-specific death Rate, Infant and child mortality rate, Measures related to morbidity.	4	3
<b>Computer Application</b> Use of Computer in data analysis and research, Use of Software and Statistical package.	0	2
<b>Total hours</b>	55	35