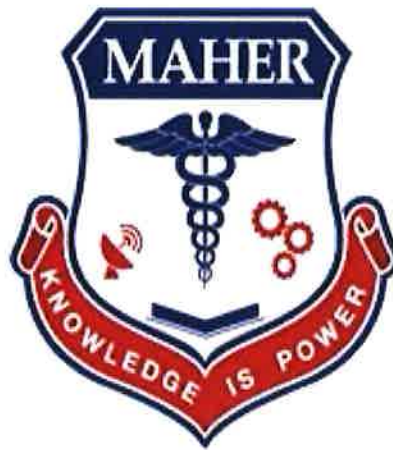



Meenakshi Academy of Higher Education & Research



BACHELOR OF ALLIED HEALTH SCIENCES B.Sc AHS(MEDICAL LAB TECHNOLOGY) REGULATIONS AND SYLLABUS (Regulations-2014)

Effective from the Academic Year 2014-2015


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

SL NO	TABLE OF CONTENTS	PG NO
I	Vision and Mission of Meenakshi Academy of Higher Education and Research	4
II	Vision and Mission of faculty of Allied Health Sciences	5
IV	Program Education Outcomes	6
V	Program Outcomes	7
V1	Program Specific Outcomes	8
VII	Regulations of the 2014	19-40
	1.Regulations Of The University	
	2.Short Title	
	3.Commencement	
	4.Title Of The Programme	
	5.Eligibility For Admission	
	6.Criteria For Selection	
	7.Age Limit For Admission	
	8.Eligibility Certificate	
	9.Registration	
	10.Duration Of The Programme	
	11.Commencement Of The Programme	
	12.Cut Off Dates For Admission To Examinations	
	13,Working Days In An Academic Year	
	14.Attendance Required For Admission To Examination	
	15.Submission Of Laboratory Record Note Book	
	16.Condonation Of Lack Of Attendance	
	17.Commencement Of Examinations	
	18.Revaluation Of Answer Scripts	
	19.Internal Assessment	
	20.Re-Admission After Break Of Study	
	21.Migration / Transfer Of Candidates	
	22.Marks Qualifying For A Pass	
	23.Classification Of Successful Candidates	
	24.Carry Over Of Failed Subjects	
	25.Branch Of Study	14
	26.Pattern Of Examination And Subjects Of Study	15-17
	27.Compulsory Rotatory Internship	40
	28.Programme Structure	41

Anand
Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education. & Research
Chennai - 600 078.

VIII	Course Description (Subjects)	
	1. Applied Basic Sciences	19-40
	2. Medical Lab Technology — II Year Mapping Courses With Program Outcomes And Program Specific Outcomes	41-50
	3. Medical Lab Technology — III Year Mapping Courses With Program Outcomes And Program Specific Outcomes	51-61
	ELECTIVES	62-65
	1. Community Medicine	62-63
	2. Clinical Psychology	64-65
	4. Copo Mapping For B.Sc AHS Medical Lab Technology	66



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

**MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
FACULTY OF ALLIED HEALTH SCIENCES
BACHELOR OF ALLIED HEALTH SCIENCES
(B.Sc AHS)MEDICAL LAB TECHNOLOGY**

REGULATIONS-2014

VISION AND MISSION OF MAHER

Vision

To be a world-class institution, transforming society through value-based diverse programs and healthcare advancements, leading to the all-around development of human resources, knowledge, innovation, entrepreneurship, and research.

Mission

To become an institute of eminence by developing world-class professionals in the field of healthcare, science, liberal arts, technology and research with a focus on the societal good.

To create an enabling state-of-the-art infrastructure, intellectual capital and provide best-in-class learning experience with a freedom to innovate and invent.

To foster values and ethics so as to develop students and learners into responsible citizens of the Nation and the world.



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

**MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
BACHELOR OF ALLIED HEALTH SCIENCES**

**(B.Sc AHS) MEDICAL LAB TECHNOLOGY
REGULATION-2014**

VISION AND MISSION OF FACULTY OF ALLIED HEALTH SCIENCES

VISION

To meet challenges of the present and the future by being adaptive, innovative and a trend setting constantly reviewing ever-growing demands of the medical community in Allied Health Science

Mission

- ✓ To prepare the young professionals who are committed in health care to excellence and innovation in health care.
- ✓ To develop and transmit knowledge of diverse aspects of health, health-care delivery and health research.
- ✓ To prepare the young emerging professionals who understand health from biological, behavioral, and population perspectives.
- ✓ To prepare the young emerging professionals who are committed in health care to excellence and innovation in health care.


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH

FACULTY OF ALLIED HEALTH SCIENCES

PROGRAMME OBJECTIVES

Programme Objectives:

1. To impart necessary knowledge and training techniques in under graduate Allied Health Sciences courses and to maintain high standards of Allied Health Sciences education.
2. To offer theoretical and practical training in all the important Allied Health Sciences branches of health activity.
3. To attain self-sufficiency in under graduate Allied Health Sciences education to meet the States need of Allied Health Sciences personnel.
4. Providing knowledge and skill based training to create qualified and competent technical personnel in the discipline of Allied Health Sciences.
5. To develop the basic skills in the students that are necessary to monitor patients within a healthcare setting.
6. To create manpower who will bridge gap between staff, Nurses and consultants. To train students in all clinical skills using clinical in all clinical demonstration and simulation base training.



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

**MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
FACULTY OF ALLIED HEALTH SCIENCES
PROGRAMME OUTCOME
MEDICAL LAB TECHNOLOGY**

PO1: Academic Education

Gain proficiency in fundamentals of medical lab technology improve our understanding of factors imparting allied health sciences

PO2 : Knowledge

Acquire comprehensive basic knowledge of coordinated functions, anatomy of heart and pathophysiology of diseases and apply them in Cases

PO3: Design and Development of Solutions

Improve knowledge to design solutions for complex problems in the associated fields and design digital imaging technology products or processes that meet the specified needs with appropriate consideration for specific diseases with specific considerations of patient .

PO4: Investigation

Analyse complex problems and investigate to develop solutions by using medical lab technology based knowledge and research methods including digital imaging technology, analysis and interpretation of data, and use of diagnostic tools in effective development of clinical solutions

PO5: Communication

Improve appropriate language and interpersonal skills in communication of clinical outcomes and outputs, develop visual and graphical methods to communicate results effectively

PO6: Role in Society

Obtain knowledge in reasoning techniques to assess societal, health, safety, legal and cultural issues associated with use of medical lab technology of allied health sciences and the consequent responsibilities of professionals involved in the use of the same.

PO7: Ethics

Acquire knowledge on ethical principles associated with research methods, use of human models, patient information, research and literature data collection and use and commit to ensuring sustainability of resources

PO8: Technology Usage

Understand appropriate diagnostic technology, techniques, modern scientific diagnostic tools to analytically understand, predict and analyze the outcome of use of allied health sciences and develop therapeutic products that improve clinical practices

PO9: Environment and Sustainability

Obtain attitude toward products that are safe to the environment, is economically, environmentally and socially sustainable with a commitment to safeguard the future of life in the planet


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Phone: 600 078

PO10: Team Work

Implement the function effectively individually and in a team under multi-skilled, multi-cultural and multi-disciplinary settings

PO11: Project Management

Gain knowledge and understanding the principles and management techniques of medical lab technology and apply these to ones own and teams work and also manage team based projects in real life environments, and leading to technological skills

PO12: Lifelong Learning

Engage in life long practical learning in the context of technological developments in allied health science and the changes that it brings about in the quality of human life

Programme Specific Outcome

PSO1-Function as a professional member of health care teams as shown by passing all their clinical courses satisfactorily

PSO2-Will have the Medical knowledge and interpersonal communication skills to assist in patient care in a professional way equipping themselves with their practice based learning mythology.

PSO3-Will have the basic skills necessary to monitor patients for any type of cardiac problems within a health care setting .

PSO4-Will have knowledge of elements of blood bank management ,materials management, supply chain management as well as lab information system management ,



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH

BACHELOR OF ALLIED HEALTH SCIENCES

(B.Sc AHS) MEDICAL LAB TECHNOLOGY

REGULATIONS-2014

1.REGULATIONS OF THE UNIVERSITY

In exercise of the powers conferred by the Board of management, Meenakshi Academy of Higher Education And Research, Chennai hereby makes the following Regulations:

2.SHORT TITLE

These Regulations shall be called "THE REGULATIONS FOR THE BACHELOR OF SCIENCE IN ALLIED HEALTH SCIENCE DEGREE PROGRAMME OF MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH".

3.COMMENCEMENT

They shall come into force from the academic year 2014-15 onwards. The regulations and the syllabus are subject to modification by the standing academic board from time to time.

4.TITLE OF THE PROGRAMME

It shall be called Bachelor of Science in Allied Health Science

5.ELIGIBILITY FOR ADMISSION

Candidates should have passed the higher secondary school certificate examination (12 years of study) Or Senior school certificate of Indian school certificate examination (12 years of study)

Or Intermediate examination of an Indian university/Board or other recognised examining body with physics, chemistry, Biology and English.

6.CRITERIA FOR SELECTION


Students for B.Sc. Degree Programme (Allied Health Science) shall be admitted based on performance at the competitive Examinations held by this University.

7.AGE LIMIT FOR ADMISSION

Candidate should have completed the age of 17 years at the time of admission or would complete the age of 17 years on or before 31st December of the year of admission to the first year B.Sc. Degree programme.

8.ELIGIBILITY CERTIFICATE

No candidate shall be admitted to the B.Sc. Degree programme (AHS) unless the candidate has obtained and produced eligibility certificate issued by this university. The candidate has to make an application to the university with the


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

original and photo copies of the following documents along with the prescribed fee:

Higher secondary or equivalent examination mark sheet and Transfer certificate

Candidate should obtain eligibility certificate before the last date for admission as notified by the university

9. REGISTRATION

A candidate admitted to the B.Sc. Degree programme (AHS) of this university shall register by remitting the prescribed fees along with the application form for registration duly filled in and forwarded to this university through the head of the institution within the stipulated time.

10. DURATION OF THE PROGRAMME

The period of certified study for the Programme of Bachelor of Science (Medical) course shall extend over a period of 3 academic years.

11. COMMENCEMENT OF THE COURSE

ACADEMIC TERMS

First year B.Sc	-	1 st August to 31 st July
Second Year B.Sc	-	1 st September to 31 st August
Third Year B.Sc	-	1 st September to 31 st August

12. CUT OFF DATES FOR ADMISSION TO EXAMINATIONS

The candidates admitted from 1st August to 30th September of the academic year be registered to take up their first year examination on 1st August of the next year. There will not be any admission after 30th September for the academic year.

13. WORKING DAYS IN AN ACADEMIC YEAR

The first academic year shall consist of not less than 240 working days

14. ATTENDANCE REQUIRED FOR ADMISSION TO EXAMINATION

- No candidate shall be permitted to any one of the parts of B.Sc exam unless he/she has attended the programme in the subject for the prescribed and produces the necessary certificates of study and attendance from the institution.
- A candidate is required to put in minimum of 80% of attendance in both and practical / clinical separately in each subject before admission examination.
- A candidate, who has not completed the programme in any subject and not submitted the course completion certificate from the head of the department will not be permitted to appear for the particular subject alone. Candidate has got adequate attendance in other subjects he/she permitted to appear for examination in those subjects.
- Attendance earned by the student should be displayed on the notice board of the department monthly and a copy of the same sent to the university computerization and parents shall be informed regarding the short attendance of their wards through e-mail (if available) or by post by the institution.


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

15.SUBMISSION OF LABORATORY RECORD NOTE BOOK

At the time of practical/clinical examination each candidate shall submit to the examiners his/her laboratory note book duly certified by the head of the department as a bonafide record of the work done by the candidate.

The practical record shall be evaluated by the concerned Head of the department (Internal Evaluation) and the practical record marks shall be submitted to the university 15 days prior to the commencement of the theory examinations

In respect of failed candidates the marks awarded for records at previous examination will be carried over to the next examinations. If a candidate desires he/she may be permitted to improve his/her performance by submission of fresh records.

16.CONDONATION OF LACK OF ATTENDANCE

Condonation of shortage of attendance up to a maximum of 10% in the prescribed eligible attendance for admission to an examination rests with the discretionary power of the Vice-chancellor. A candidate lacking in attendance shall submit an application in the prescribed form and remit the stipulated fee 15 days prior to the commencement of the theory examination.

The head of the department and head of the institution should satisfy themselves on the reasonableness of the candidate request while forwarding the application with their endorsements to the controller of examination who would obtain the Vice-chancellor's approval for admission to the examinations. No application would be reviewed if it is not forwarded through proper channel.

Condonation for lack of attendance shall be taken up for consideration under the following circumstances:

Any illness afflicting the candidate. (The candidate should submit to the head of the institution a medical certificate from registered medical practitioner soon after he/she returns – the institution after treatment.)

Any unforeseen tragedy in the family. (The parent/guardian should give in writing the reason for the ward's absence to the Head of the Institution

Any other leave the Head of the Institution deems reasonable for condonation 50% of marks in internal assessment is compulsory for condonation of lack of attendance.

17.COMMENCEMENT OF EXAMINATIONS

August 1st/February 1st. If the date of commencement falls on Saturdays, Sunday declared public holidays, the examination shall begin on the next working day.

18.REVALUATION OF ANSWER SCRIPTS

There shall be no revaluation of answers papers of failed candidates in any undergraduate examination. However, Re-totaling of failed subjects will be entertained on payment of the prescribed fee.

19.INTERNAL ASSESSMENT

a) A minimum of four written examinations shall be conducted in each subject during an academic year and the average marks of three best performances shall be taken into consideration for the award of internal assessment of mark

- b) A minimum of three practical examinations shall be conducted in each subject during an academic year and an average of two best performances shall taken into consideration for award of international assessment marks.
- c) A failed candidate in any subject should be provided an opportunity to improve his / her internal Assessment marks by conducting a minimum of two examinations, in theory and practical separately and the average may be considered improvement. If failed candidate do not appear for an improvement in failed subject (s) the internal marks awarded for the previous examination shall be carried over the subsequent appearance (s).
- d) The internal assessment marks (both in written and practical's taken together should be submitted to the University endorsed by the head of the Institution 15 days prior to the commencement of the theory examinations.

20.RE-ADMISSION AFTER BREAK OF STUDY

- a) The calculation of the break of study of the candidate for readmission shall be calculated from the date of first discontinuance of the course instead of from the date of admission.
- b) Candidates having break of study shall be considered for readmission provided, they are not subjected to any disciplinary action and no charges pending or contemplated against them.
- c) All readmission of candidates are subjected to the approval of the Vice-Chancellor.
- d) A candidate having a break of study more than 2 years and up to 5 years shall apply for the readmission condonation to the Academic officer of this University. The candidate may be readmitted to the beginning of the academic year of the programme. The candidate has to fulfil the attendance requirements of the University and shall be granted exemption in the subjects he has already passed.
- e) Candidates having a break of study of 5 years and above from the date of discontinuance and more than two spells break will not be considered for readmission.

21.MIGRATION / TRANSFER OF CANDIDATES

- a) Migration / Transfer of candidates from one recognized college to another recognized college of this university or from another University shall be granted as per the recommendation of the University regulations.
 - I) Migration may be considered in exceptional cases or Extreme compassionate ground.
 - II) Death of a supporting guardian, illness of the candidate disability, disturbed condition as declared by govt. In the college area.
- b) The combination of attendance shall be granted to a transfer for admission to the examinations of this university or payment of the necessary fee and satisfying the Nursing council of India regulations.
- c) The applicant candidate should have passed first year Examination.
- d) Migration during clinical programme of study shall not be allowed on any ground.
- e) All migrations/transfers are allowed on payment of the prescribed fee.
- f) All migrations/ transfers are subject to the approval of the Vice-chancellor.


Principal

22.MARKS QUALIFYING FOR A PASS

A candidate shall be declared to have passed the examination if he/she obtain 50% of all the marks in University Theory examination, 50% of the marks in University Practical examination and 50% aggregate in University Theory, Practical, Oral and Internal Assessment taken together.

23.CLASSIFICATION OF SUCCESSFUL CANDIDATES

a) A successful candidate who secures 75% and above of the marks in his/her first appearance in all the subjects within the prescribed period will be declared to have passed in first class with Distinction.

b) A successful candidate who secures 75% and above of the marks in his/her first appearance in a subject within the prescribed period will be declared to have passed in first class with Distinction in that particular subject.

c) A successful candidate who secures 60% and above of the marks in his/her first appearance in all the subjects within the prescribed period will be declared to have passed in First class.

d) All other successful candidates shall be declared to have passed in Second class.

24.CARRY OVER OF FAILED SUBJECTS

a) A candidate who fails in any subject can carry over the failed subject. However only three attempts are allowed in each subject including the 1st attempt.

b) A Candidate has to pass in theory and practical examination separately in each of the paper

c) If a candidate fails either in theory and practical examination has to reappear for both (theory and practical).

d) The candidate has to successfully complete the programme in 6 years (i.e.) double duration of the programme from the date of joining.

26.BRANCH OF STUDY


Bachelor of Science AHS

in:

Medical Lab Technology

SUBJECTS OF STUDY

B.Sc Allied health sciences (Medical Lab Technology)


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

27.PATTERN OF EXAMINATION AND SUBJECTS OF STUDY

Scheme of examination IST year

Section A	2 Essays (any 1)	1 x 6 Marks each	6 Marks	25 Marks	
	4 Short Notes (any 3)	3 x 3 Marks each	9 Marks		
	5 Ultra short notes	5 x2 Marks each	10 Marks		
Section B	2 Essays (any 1)	1 x 6 Marks each	6 Marks	25 Marks	
	4 Short Notes (any 3)	3 x 3 Marks each	9 Marks		
	5 Ultra short notes	5 x2 Marks each	10 Marks		
	Theory Total			50	Marks
	Practical			50	Marks
	Internal Assessment			30	Marks
	Viva – Voice			20	Marks
			Grand Total	150	Marks

Scheme of examination IInd & IIIrd year

Section A	2 Essays (any 1)	1 x 15 Marks each	15 Marks	50 Marks	
	6 Short Notes (any 5)	5 x 5 Marks each	25 Marks		
	5 Ultra short notes	5 x2 Marks each	10 Marks		
Section B	2 Essays (any 1)	1 x 15 Marks each	15 Marks	50 Marks	
	6 Short Notes (any 5)	5 x 5 Marks each	25 Marks		
	5 Ultra short notes	5 x2 Marks each	10 Marks		
	Theory Total			100	Marks
	Practical			50	Marks
	Internal Assessment			30	Marks
	Viva – Voice			20	Marks
			Grand Total	200	Marks

Minimum for Passing

50% marks in the University written examination

50% marks in the University practical examination

50% marks in the aggregate of written, oral, practical and internal assessment

28. Compulsory Rotatory Internship

All the candidates must undergo compulsory rotatory internship training for one year

29. Award of Degree

The B.Sc. degree shall be granted after successful completion of the programme and the compulsory

Rotatory Internship

I YEAR B.Sc AHS MEDICAL LAB TECHNOLOGY (PROG.CODE-703)

PROGRAMME STRUCTURE


Course Code	Course Name	Lecture Hrs/Week	Tutorial Hrs/Year	Practical Hrs/Week	Internal Assessment (IA)	Internal Examination	External Assessment (EA) University Examination				Grand Total
							Theory	Viva	Practical	Total	
001	Anatomy	02	-	01	30	-	50	20	50	120	150
002	Physiology	02	-	01	30	-	50	20	50	120	150
003	Biochemistry	02	-	01	30	-	50	20	50	120	150
004	Pathology	02	-	01	30	-	50	20	50	120	150
005	Microbiology	02	-	01	30	-	50	20	50	120	150
006	Pharmacology	02	-	01	30	-	50	20	50	120	150
009	Principles of Management	01	-	-	30	100	-	-	-	-	130
010	Basics of Computer	01	-	-	30	100	-	-	-	-	130
011	English	01	-	-	30	100	-	-	-	-	130



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Educator & Research
Chennai - 600 078.

MEDICAL LAB TECHNOLOGY (Programme code -703)
IIND year

S.No	Subject Code	Subject	LECTURE Hrs/Wk	TUTORIAL Hrs/Wk	PRACTICAL Hrs/Wk	Internal Assessment	Internal Examination		University Exam			Total Marks
							Theory	Practical	Theory	Practical	Viva (20)	
1	5401	Hematology And Clinical Pathology	05	-	03	30	-	100	50	20	170	2
2	5402	Clinical Biochemistry - I	05	-	03	30	-	100	50	20	170	2
3	5403	Systematic Bacteriology, Immunology And Mycology	05	-	03	30	-	100	50	20	170	2


Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

IIIRD year

S.no	Subjectcode	Subject	Lecture hrs/wk	Tutorial hrs/wk	Practical hrs/wk	Internal assessment	Internal Examination	University exam			Total Marks
								Theory	Theory (50)	Practical (50)	
1	5404	Histopathology And Cytology	05	-	-	30	-	100	50	20	200
2	5405	Clinical Biochemistry -II	05	-	-	30	-	100	50	20	200
3	5406	Virology, Parasitology And Clinical Microbiology	05	-	03	30	-	100	50	20	200
4	ELECTIVES(select one)										
	5407	1.Clinical Psychology	05	-	-	30	-	100	-	-	130
	5406	2.Community Medicine	05	-	-	30	-	100	-	-	130



Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

**PAPER I –
ANATOMY
SYLLABUS
Paper I – Anatomy**

SYLLABUS

COURS ECODE	Course name	L hrs /w k	T hrs/ wk	P hr s/ wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5001	ANATOMY	02	-	01	03	30	50	20	50	120	150

COURSE DESCRIPTION

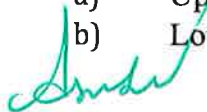
The study of anatomy will include identification of all gross anatomical structures. Particular emphasis will be placed on description of bones, joints, muscles, the brain, Cardio-pulmonary and nervous systems, as these are related to the application of physiotherapy in patients.

COURSE OBJECTIVES

- The objective of this course is the student will be able to demonstrate knowledge in human anatomy for the study and practice of physiotherapy.
- To describe the various components of upper, lower extremity ,head and neck and thorax.
- In addition, the student will be able to fulfill with 75% accuracy (as measured written and oral internal evaluation) the following objectives of the course.

COURSE CONTENT:

1. Introduction to Anatomy
2. Basic Anatomical Terminology
3. Osteology -
 - a) Upper Limb - Clavicle, Scapula, Humerus, Radius, Ulna
 - b) Lower Limb – Hip Bone, Femur, Tibia, Fibula



- c) Vertebral Column – Cervical, Thoracic, Lumbar & Sacral Vertebrae
- 4. Thorax – Thoracic Cage, Sternum, Ribs, Intercostal Space.
- 5. Respiratory System – Parts, Trachea, Bronchial Tree, Lungs, Pleura
- 6. Cardio Vascular System –
 - a) Heart – Surface anatomy, Chambers, Valves, Blood supply of the Heart
- Pericardium. Major Vessels of heart.
- 7. Vessels of Upper limb
 - a) Subclavian Artery – Parts, Branches
 - b) Axillary Artery – Parts, Branches
- c) Brachial Artery, Radial artery, Ulnar artery
 - d) Basilic vein, Cephalic vein, Median Cubital vein
 - e) Cubital Fossa
- 8. Vessels of Lower limb
 - a) Femoral artery,
 - b) Popliteal artery
 - c) Dorsalis Pedis Artery,
 - d) Saphenous veins, femoral vein
- 9. Muscular System Muscles of Thorax. Muscles of upper limb (Arm & Forearm) Muscles of Lower limb (Thigh & Leg)
- 10. Excretory System Kidney, Ureter, Urinary Bladder, Structure of Nephron
- 11. Digestive System Parts, Stomach, Liver, Pancreas, Situation, Functions
- 12. Endocrine System Pituitary gland, Thyroid gland, Adrenal gland situation, functions
- 13. Reproductive System Male Reproductive system – Parts, Situation, Functions Female Reproductive system 0 Parts, Situation, Functions Central Nervous System Outline of Brain and Spinal cord Histology Basic tissues Brief Epithelium Connective tissue Salivary glands Bone Cartilage Muscle

B) Practicals :

Osteology Bones :

Side Identification, Prominent features, Muscle attachment

- I. Organs – Heart, Lungs, Liver, Spleen, Stomach, Kidney.

Histology

Epithelium – Simple squamous epithelium Simple cuboidal epithelium

Simple columnar epithelium Transitional epithelium Bone

Cartilage

Hyaline cartilage Elastic cartilage White fibro cartilage Salivary glands

Serous salivary gland Mucous salivary gland Mixed salivary gland Muscles

Skeletal Muscle Smooth Muscle Cardiac Muscle

Practical record compulsory for Osteology & Histology

Total Hours : 80

Theory : 60

Practical : 20



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

Prescribed Text Book

Manipal Manual of Anatomy for Allied Health Science Courses

Author : Sampath Madhyastha

Edition : Third

Edition Publishers : CBS

COURSE OUTCOME

CO1: Gain knowledge about various organs of the human body and their functions

CO2: Acquire knowledge in structural and functional relationship of Multi organ system

CO3: Proficiency on the investigation in the overall functions of each system

CO4: Understand the competency of various skeletal muscles and identify various bones and their processes in detail based on their presence in the body

CO5: Recall and reason out vital profiles that distinguishes altered functions of organ in human health and disease

CO	PO												PSO1	PSO2	PSO3
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO1	2	2	2	3	2	3	3	2	3	2	3	2	3	3	3
CO2	2	1	-	3	-	2	3	2	2	3	2	2	3	2	2
CO3	-	3	3	-	3	3	2	2	3	-	3	2	-	3	3
CO4	3	3	2	3	3	3	-	3	-	3	2	-	3	3	3
CO5	3	3	3	3	2	3	2	2	3	3	2	3	2	3	3
AVE	2	2.4	2	2.4	2	2.8	2	2.2	2.2	2.2	2.4	1.8	2.2	2.8	2.8


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

PAPER II – PHYSIOLOGY

COURS ECODE	Course name	L hrs /w k	T hrs/ wk	P hr s/ wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5002	Physiology	02	-	01	03	30	50	20	50	120	150

COURSE DESCRIPTION

This course which runs concurrently with the anatomy course helps the student to understand the basis of normal human physiology with special emphasis on the functioning of the cardiovascular, musculoskeletal and nervous system.

COURSE OBJECTIVES

- To demonstrate an understanding of elementary human physiology.
- To describe the physiological functions of each system of human physiology
- The student will be able to fulfill with 75% accuracy (as measured by written and oral internal evaluation) the following objectives of the course.

COURSE CONTENT

THEORY:-

1. The cell - cell structure and functions of the various organelles, endocytosis, exocytosis and homeostasis, Acid base balance and disturbance of acid base imbalance.
2. Blood - composition of blood, functions of blood, Erythropoiesis, plasma protein, pathological and physiological variations of RBC structure, function and metabolism of hemoglobin, erythrocyte sedimentation rate, WBC, platelets, coagulation, coagulants, bleeding disorders, blood grouping.
3. Cardio vascular system- physiological anatomy of heart, functions of heart, conducting system of heart, cardiac cycle, cardiac output, heart sounds, ECG, Arterial blood pressure and its regulations, Applied physiology like hypertension, cardiac murmur.
4. Respiratory system - physiological anatomy of respiratory tract, non respiratory functions of respiratory system, Mechanism of respiration, lung volumes and capabilities, Artificial ventilation and cpr, regulation of respiration, respiratory movements and transport of respiratory gases or exchange of respiratory gases.
5. Excretory system - physiological anatomy of excretory system, non excretory functions of excretory system, urine formation, micturition reflex, renal disorders, renal dialysis.

6. Reproductive system - physiological anatomy of male and female reproductive system, process of spermatogenesis and oogenesis, menstruation, hormones of reproductive system.
7. Central nervous system - Functions of CSF, Significance of CSF analysis, blood brain barrier, transport of CSF.
8. Endocrine system - Functions of pituitary, thyroid, parathyroid, adrenal and pancreatic hormones.
9. Digestive system - physiological anatomy of GIT, digestion in the mouth, stomach and intestine, Absorption of food, role of bile in digestion.

Practical's:

1. Compound microscope
2. Determination of blood group
3. Determination of bleeding time
4. Determination of clotting time
5. Estimation of hemoglobin-sahlis method
6. Measurement of human blood pressure
7. Determination of ESR- Westergren's method
8. Determination of PCV
9. Effect of posture on vital capacity
10. ECG and its clinical importance
11. Functions of saliva, gastric juice and pancreatic juice
12. Dialysis (theory only)

COURSE OUTCOME

- CO1: Recognize functions of various structures in the body
 CO2: Understand the physiological functions of major organs and systems
 CO3: Acquire knowledge on normal physiological functions of living organisms and their parts
 CO4: Gain knowledge on the investigation in the physiological functions of each system
 CO5: Recognise disciplines of various structures in microscopic and macroscopic level

CO	PO												PSO1	PSO2	PSO3
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO1	3	1	3	3	3	3	2	2	3	3	3	2	2	3	3
CO2	3	-	2	3	-	2	3	3	2	--	2	2	2	3	2
CO3	-	3	3	3	2	3	-	3	3	3	-	-	3	2	-
CO4	3	3	2	-	3	-	2	2	3	3	2	3	2	-	2
CO5	2	2	-	3	3	3	3	2	3	2	2	3	3	3	3
AVE	2.2	1.8	2	2.4	2.2	2.2	2	2.4	2.8	2.2	1.8	2	2.4	2.2	2



III-BIOCHEMISTRY

COURSE CODE	Course name	L hrs /wk	T hrs/wk	P hrs/s/wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5003	Biochemistry	02	-	01	03	30	50	20	50	120	150

COURSE DESCRIPTION:

The main goal of the under-graduate education in Biochemistry is to enable Paramedical student understand, envisage and explain life processes as molecular events and apply his basic knowledge and skills.

COURSE OBJECTIVES:

1. Principles of various conventional and specialized laboratory investigations and instrumentation, analysis and interpretation of a given data; the ability to suggest experiments to support theoretical concepts and clinical diagnosis.
2. At the end of the course, the student should be able to make use of conventional techniques / instruments to perform biochemical analysis relevant to clinical screening and diagnosis
3. Analyze and interpret investigative data
4. Demonstrate the skills of solving clinical problems and decision making.

COURSE CONTENT

- I. Biomolecules and the cell: Major Complex Biomolecules of cells. Cell and Cell organelles. Prokaryotic and eukaryotic cell.
- II. Carbohydrates: Chemical structure. Function. Classification. Monosaccharides. Disaccharides, Polysaccharides. Homopolysaccharides, Heteropolysaccharides, Glycoproteins, Diabetes mellitus.
- III. Proteins: Amino acids, Classification. Structure. Properties. Structure of proteins, Determination of protein structure, Properties of proteins, Denaturation. Classification of proteins Antigen, Antibody. Types, Plasma proteins, Blood Clotting.



- IV. Lipids: Chemical structure, Functions. Classification, Fatty acids, Triglycerides, Phospholipids, Glycoproteins, Lipoproteins, Steroids, Amphipathic lipids, Bile Salts.
- V. Nucleic acids: Purines and pyrimidines. Structure of DNA. Watson and Crick model of DNA. Structure of RNA. Types of RNA, Gout.
- VI. Enzymes: Definition, Nomenclature, Classification. Factors affecting enzyme activity, Active site. Coenzyme. Enzyme inhibition. Mechanism of enzyme action. Units of enzyme. Isoenzyme. Enzyme pattern in diseases.
- VII. Vitamins & Minerals: Fat soluble vitamins [A, D, E, K] Water soluble vitamins---B--- complex & vitamin C. Principal Elements [Calcium, Phosphorous, Magnesium, Sodium, Potassium, Chloride and Sulphur]. Trace elements, Calorific value of foods. Basal metabolic rate[BMR]. Respiratory quotient [RQ] Specific dynamic action [SDA]. Balanced Diet, Nitrogen Balance, Marasmus kwashiorkor, Dietary Fiber.
- VIII. Hormones: Classification, Mechanism of action. Hypothalamic hormones. Pituitary. Anterior, Posterior, Thyroid, Adrenal Cortex, Adrenal medulla, Gonadal hormones, Menstrual cycle, GI hormones.
- IX. Acids and bases: Definition, pH, Henderson Hassel Balch equation, Buffers. Indicators. Normality. Molarity. Molality
- X. BILE PIGMENTS JAUNDICE

COURSE OUTCOME

CO1: Gain knowledge in determining various biochemical reactions

CO2: Understand the various metabolic activities and biological process

CO3: Recognize enzymatic activities required for metabolism of various biomolecules.

CO4: Proficiency in concepts of chemical reaction and reaction rate in biological systems

CO5: Acquire knowledge on the geometry and conformations of biomolecules

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	2	2	3	2	3	2	2	3	3
CO2	3	3	3	2	2	3	3	3	2	3	2	2	2	3	2
CO3	3	2	1	3	3	1	2	2	3	3	3	1	3	3	2

CO4	-	3	-	3	1	3	-	1	3	2	-	2	3	-	3
CO5	1	3	3	2	1	3	2	2	2	3	2	3	1	3	2
AVE	2	2.8	1.8	2.6	2	2.6	1.8	2	2.6	2.6	2	2	2.2	2.4	2.4



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

PAPER IV- PATHOLOGY

COURS ECODE	Course name	L hrs/ wk	T hrs/ wk	P hr s/ wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5004	PATHOLOGY	02	-	01	03	30	50	20	50	120	150

COURSE DESCRIPTION:

The Goal of teaching pathology is to provide undergraduate students comprehensive knowledge of the causes and mechanisms of disease, in order to enable them to achieve complete understanding of the natural history and clinical manifestations of the disease.

COURSE OBJECTIVES:

1. At the end of one and half years the student shall be able to describes the rationale and principles of technical procedures of diagnostic laboratory tests.
 2. Interpret diagnostic laboratory tests and correlate with clinical and morphological features of Diseases.
2. Perform simple bedside tests on blood, urine and other biological fluid samples

COURSE CONTENT:

CELL INJURY – Causes, Mechanism and types of Cell injury; Necrosis; Apoptosis; gangrene; Pathologic calcification; fatty Amyloidosis.

INFLAMMATION – Acute inflammation- cellular and vascular events; chemical mediators of inflammation; Chronic inflammation; Systemic effects of inflammation; granulomatous inflammation.

WOUND HEALING– Terms repair and regeneration; primary wound healing; secondary wound healing; factors affecting wound healing; complications.

CIRCULATORY DISTURBANCE– Thrombosis; embolism; shock; edema.

INFECTIONS-TB: Leprosy; syphilis; HIV; typhoid; malaria opportunistic infections. **GENETIC DISORDER-** Karyotyping; Down syndrome; Klinefelter's syndrome; Turner' syndrome.

CVS DISEASES– Infective endocarditic; rheumatic heart disease; aneurysm; Atherosclerosis; angina pectoris; myocardial infarction; congenital heart disease- TOF, ASD, VSD, PDA; coarctation of aorta.

RESPIRATORY DISEASES– Asthma; COPD; ARDS; pneumonia; lung abscess; lung cancer; pneumoconiosis.

RENAL DISEASES– Glomerulonephritis; nephrotic syndrome; Urinary tract infection; renal stone; renal failure.

CELLULAR ADAPTATION– Atrophy, hypertrophy, hyperplasia; metaplasia. **NEOPLASIA**-definition; difference between benign and malignant; causes of cancer; metastasis.

HYPERSENSITIVITY REACTIONS– type I, II, III, IV

27

Principal

REFERENCES: Harsh Mohan for dental student.

COURSE OUTCOME:

CO1: Gain knowledge in the patho physiological changes in a human system

CO2: Analyse and investigate the changes in the human system that can be tagged for acquiring information about normal and abnormal condition.

CO3: Acquire and articulate knowledge and science relevant to pathological processes.

CO4: Establish competency in analysis of disease conditions and their causes.

CO5: Recognize the pathological conditions of major organs and structure

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	3	3	2	3	3	3	2	1	3	2	3	2	2	3	3
CO2	3	2	3	3	2	3	3	3	2	2	2	2	2	3	2
CO3	3	3	2	-	3	3	2	2	3	1	3	2	3	2	2
CO4	-	2	3	2	3	-	1	-	2	2	-	2	2	3	1
CO5	2	3	3	2	1	3	2	2	2	3	2	3	3	2	3
AVE	2.2	2.6	2.6	2	2.4	2.4	2	1.8	2.4	2	2	2.2	2.4	2.6	2.2



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

PAPER V – MICROBIOLOGY

COURSE CODE	Course name	L hrs /wk	T hrs/wk	P hrs/wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5005	MICROBIOLOGY	02	-	01	03	30	50	20	50	120	150

COURSE DESCRIPTION

The goal of teaching Microbiology is to provide understanding of the natural history of infection diseases in order to deal with the etiology, pathogenesis, pathogen city, Laboratory diagnosis treatment, control and prevention of these infection and infectious diseases.

COURSE OBJECTIVES:

1. Plan and interpret laboratory investigations for diagnosis of infectious diseases and correlate the clinical manifestations with the etiological agent.
2. Perform simple laboratory tests, which help to arrive at rapid diagnosis.
3. Understand methods of disinfections and sterilization and their application to control and prevent hospital and community acquired infections including universal bio safety precautions and waste diseases.
4. Recommended laboratory investigations regarding bacteriological examination of food, water, milk and air.

COURSE CONTENT:

UNIT	CHAPTERS
------	----------

GENERAL MICROBIOLOGY	History of Microbiology, Microscopy, and Staining Techniques, Bacterial Anatomy, Culture medium & Techniques, Sterilization & Disinfection, Infection control Measures, Antimicrobial susceptibility testing & Drug resistance
IMMUNOLOGY	Immunity & types, Immune response, Antigen & Antibody / immunoglobulin, Antigen antibody interactions, Hypersensitivity Autoimmunity & Immune deficiency disorders, tumor & transplantation, Immunology
SYSTEMIC BACTERIOLOGY	Staphylococcus, Streptococcus, Pneumococcus Neisseria, Corynebacterium, Clostridium, Mycobacterium, Enterobacteriaceae, Spirochetes, Nosocomial infections, Zoonoses, Miscellaneous Bacteria
VIROLOGY	Introduction & Classification, Enteroviruses Herpes viruses Orthomyxo & Paramyxo viruses, Adenovirus, Rhabdoviruses Oncogenic Viruses(HPV), Hepatitis viruses, HIV
MYCOLOGY	Introduction, Superficial Mycoses, Subcutaneous Mycoses, Systemic Mycoses, Opportunistic Mycoses
PARASITOLOGY	Amoebiasis, Malaria, Ascariasis
TEXT BOOK	Prescribed Textbook of microbiology by Anandha Narayan & Panicker

COURSE OUTCOME:

CO1: Obtain better understanding of life cycles of major microorganisms.

CO2: Gain knowledge on the diseases and disorders caused due to infections by those microorganism

CO3: Acquire and articulate knowledge and science relevant to microbiology

CO4: Establish competency in analysis of disease conditions caused by microorganisms

CO5: Attribute in research related to microbiology discipline with clarity.


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

CO	PO												PSO1	PSO2	PSO3
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO1	3	3	2	3	3	3	3	2	3	2	1	2	1	3	3
CO2	-	3	3	2	2	2	3	3	2	3	2	2	3	2	2
CO3	3	3	3	2	3	2	2	1	2	2	3	3	3	3	3
CO4	2	-	-	3	3	3	-	2	-	2	2	3	-	3	3
CO5	1	3	3	2	1	3	2	2	3	3	2	3	3	2	3
AVE	1.8	2.4	2.2	2.4	2.4	2.6	2	2	2	2.4	2	2.6	2	2.6	2.8


Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

PAPER VI - PHARMACOLOGY

COURS ECODE	Course name	L hr s/ wk	T hrs/ wk	P hrs /wk	Total hours	IA	Theory	Viva	Practical	EA	Tot
5006	PHARMACOLOGY	02	-	01	03	30	50	20	50	120	150

A. COURSE DESCRIPTION

1. Identify Adverse Reactions and Interactions of commonly used drugs
2. Posses basic knowledge about drug guidelines of drug testing louse.

B. COURSE OBJECTIVES

1. At The end of the course, the student will be able to the general principles of actions and effects of various drugs and their kinetics.
2. At The end of the course , the student will be able to find different types of biomedical waste, their potential risks and the management of health hazards caused by them

C. COURSE CONTENT:

UNIT – I GENERAL PRINCIPALS OF PHARMACOLOGY

1. Introduction, Definitions
2. Routes of administration, Newer drug delivery system
3. Pharmacokinetics – Absorbtion, Distribution, Metabolism & Excretion of Drugs
4. Pharmacodynamics – Mechanism of drug action
5. Adverse drug reactions

UNIT – II DRUGS ACTING ON NERVOUS SYSTEM

❖ Central Nervous System

1. General considerations
2. General anesthetics
3. Sedatives and Hypnotics
4. Anti-epileptic agents
5. Opioid analgesics
6. Antipsychotics, antianxiety and CNS stimulants.

❖ Autonomic Nervous System

1. General considerations
2. Cholinergics – Alkaloids, esters, Anticholinesterases, anti cholinergics
3. Adrenergics – Nor – adrenaline, Adrenaline, and Dopamine, anti adrenergics –
a-blockers and 13-blockers

❖ Peripheral Nervous System

1. Skeletal muscle relaxants
2. Local anesthetics

UNIT III AUTOCOIDS AND RELATED DRUGS

1. Histamine and Antihistaminics
2. Nonsteroidal Antiinflammatory Drugs and Antipyre – Analgesics
3. Antirheumatoid and antigout drugs

UNIT – IV RESPIRATORY SYSTEM

Drugs used in cough and Bronchial asthma

GASTROINTESTINAL SYSTEM

Drugs used in peptic ulcer

Emetics and Antiemetics

Drugs for constipation and Diarrhoea

UNIT – V HORMONES AND RELATED DRUGS

1. Introduction
2. Anterior pituitary hormones
3. Thyroid hormone and thyroid inhibitors
4. Insulin and Oral hypoglycemic agents
5. Corticosteroids, androgens, estrogens, progestins and contraceptives
6. Drugs affecting calcium balance.

UNIT – VI CARDIOVASCULAR SYSTEM AND BLOOD

1. Introduction to cardiac Electrophysiology
2. Drugs affecting Renin – Angiotensin system – ACE – Inhibitors, Angiotensin antagonist
3. Drugs used in Congestive Heart failure-Cardiac glycosides
4. Antiarrhythmic agents
5. Antianginal agents
6. Antihypertensive agents
7. Haematinics- iron, Vit-B12 and Folic acid
8. Coagulants – Vit-k, Local haemostatics
9. Anticoagulants- Heparin, Warfarin sodium
10. Antiplatelet agents, fibrinolytics, Antifibrinolytics
11. Hypolipidaemic agents and plasma expanders.
12. shock-types (Hypovolemic, Cardiogenic, Neurogenic and Septic shock) and its management

UNIT – VII DRUGS ACTING ON KIDNEY

Renal Physiology – Urine formation – Diuretics and Anti diuretics

UNIT – VIII CHEMOTHERAPY

1. Antimicrobials – General considerations
2. Sulfonamides, Cotrimoxazole and Quinolones
3. Beta – lactam antibiotics (Penicillin and Cephalosporins)
4. Tetracyclines and chloramphenicol
5. Aminoglycosides, Macrolides
6. Antitubercular drugs & Antieprotic drugs
7. Antifungal drugs
8. Antiviral drugs
9. Antimalarial and Antiamoebic drugs
10. Anthelmintic drugs
11. Anti-cancer drugs
12. Urinary antiseptics

UNIT – IX MISCELLANEOUS

1. Immunomodulators
2. Chelating agents
3. Gases
4. Vitamins
5. Vaccines and sera
6. Enzymes in therapy
7. Antiseptics and Disinfectant

PART – II

CLINICAL TOXICOLOGY

General Principles in Toxicology - poisons and its treatment

❖ PRESCRIBED BOOK FOR STUDENTS :

1. Medical Pharmacology – KD Tripathi 71th Edition
2. Medical Pharmacology – Padamaja Udayakumar 31st Edition
3. Pharmacology & Phan – nacotheapeutics – R.S.Satoskar 23rd Edition

❖ REFERENCE TEXT BOOK:

1. Clinical pharmacology – Bertram, G.Katzung 21st Edition

2. The Pharmacological basis in Therapeutics – cidodman8, Gillman 12th Edition

C.COURSE OUTCOME:

CO1: Acquire and articulate knowledge relevant to drug performance and regime plans.

CO2: Establish competency in analysis of drugs' mechanism of action.

CO3: Recognize and relate the importance of drugs in clinical practice.

CO4: Identify the various drug reactions and pharmacokinetics.

CO5: Gain knowledge on the purpose of drugs and their mechanism of actions for various conditions

CO	PO												PSO1	PSO2	PSO3
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO 1	3	3	2	3	3	3	2	1	3	2	3	2	2	3	3
CO2	3	2	3	3	2	3	3	3	2	2	2	2	2	3	2
CO3	3	3	2	-	3	3	2	2	3	1	3	2	3	2	2
CO4	-	2	3	2	3	-	1	-	2	2	0	2	2	3	1
CO5	2	3	3	2	1	3	2	2	2	3	2	3	3	2	3
AVE	2.2	2.6	2.6	2	2.4	2.4	2	1.8	2.4	2	2	2.2	2.4	2.6	2.2



Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

PAPER VII- PRINCIPLES OF MANAGEMENT

COURSE CODE	Course name	L hr s/wk	T hr s/wk	P hr s/wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5009	PRINCIPLES OF MANAGEMENT	01	-	-	01	30	100	-	-	-	130

COURSE DESCRIPTION

This course is designed to enable students to acquire in-depth understanding of management of hospital services, management of services and educational programmes.

COURSE OBJECTIVES

1. Understand the principles and functions of management
2. Understand the elements and process of management
3. Appreciate the management of nursing services in the hospital and community.

COURSE CONTENT:

A) PRINCIPLES OF MANAGEMENT

Development of management :- Definition of management contribution of F.W Taylor ,Henry Fayol and others

Functions of management : planning = organizing direct controlling Planning :- types of planning short – term and long term plans cooperate orstrategic planning planning premises policies characteristics and source principles of policy making strategies as different from policies procedure and methods limitations of planning

organizing:- Importance of organization hierarchy scalar chain Organization relationship line and staff relationship Functional relationship committee organization management committees department

Motivation:- Motivation theories Mc Gregors's theory X andY Maslows's and Herzberg's theory porter and Lawler model of complex view of motivation Other theories Diagnostic signs of motivational problems Motivational techniques

Communication:- types of communication barrier of effective communication techniques for improved communication

Directing:- Principles relating to direction process principles and theories of leadership leadership styles Delegation of authority

Controlling:- span of control factor limiting effective span of control Super management, General managers, Middles managers and supervisors planningand corrective measures strategic control points budgetary control types of budget

Co- ordination :- Co- ordination and co-operation Principles of co- ordination

Techniques of co- ordination Organization charts and records Standard procedure instruction

B) PERSONNEL MANAGEMENT

I) Objective of personnel management role of personnel manager in
personnel manager in organization staffing and work distribution
techniques job analysis description recruitment and selection process orientation and
train coaching and counseling disciplining complaints and grievance termination of
employees performance appraisal health and safety employees

II) Consumer protection Act as applicable to health care services

FINANCIAL MANAGEMENT

Definition of financial management profit maximization set maximization short term
financing – intermedi financing long term financing leasing as a source of finance C
and security management – inventory management divided policy valuation of
shares financial management in a hospital third party payment on behalf of patients

Insurance:- health scheme and policy

COURSE OUTCOME:

CO1: Obtain knowledge on the functioning of hospital

CO2: Proficiency in different areas of management

CO3: Gain knowledge in the latest concepts of management.

CO4: Acquire knowledge on the various clinical and non-clinical services .

CO5: Identify and work on ethical and legal aspects of hospital management.

CO	PO												PSO1	PSO2	PSO
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO1	3	3	2	3	3	3	2	1	3	2	3	2	2	3	3
CO2	3	2	3	3	2	3	3	3	2	2	2	2	2	3	2
CO3	3	3	2	-	3	3	2	2	3	1	3	2	3	2	2
CO4	-	2	3	2	3	-	1	-	2	2	0	2	2	3	1
CO5	2	3	3	2	1	3	2	2	2	3	2	3	3	2	3
AVE	2.2	2.6	2.6	2	2.4	2.4	2	1.8	2.4	2	2	2.2	2.4	2.6	2.2


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

PAPER VIII- BASICS OF COMPUTER

COURSE CODE	Course name	L hr s/ wk	T hr s/ wk	P hr s/ wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5010	BASICS OF COMPUTER	01	-	-	01	30	100	-	-	-	130

COURSE DESCRIPTION

This course is designed for students to development basic understanding of uses of computer and its applications.

COURSE OBJECTIVES

1. Identify & define various concepts used in computer.
2. Identify & describe application of computer in nursing. 3

Describe & use the DOS & Windows

4. Describe & demonstrate skill in the use of MS-office.

COURSE CONTENT

I) Introduction to computer I/O Device memories – RAM & different kinds of ROM- kilobytes, MB, GB, their conversions computer- medium, micro, mini computers Different corn languages number system binary & decimal conversions Different operating systems- MS- DOS Basics command- MD, MS, DIR, T and COPY CON commands networking – LAN ,WAN,MAN(basic ideas)

II) Typing and texting MS-WORD – manipulating text formatting the using different fonts, font sizes , bold, italic bullets and numb picture ,file insertion aligning the text and justify choosing p size, adjusting margins ,header and footer , inserting page no's document printing a file with options using spell check and grammar find and replace mail merge inserting tables in a document. Creating table MX EXCEL- Cell editing using formulas functions manipulating data with excel using sort function to numbers and alphabets. Drawing graphs and charts using data in Auto formatting inserting data from other work sheets Preparing new slides using MS- POWERPOINT Inserting slides – transition and animation using templates Different text and font slides with sounds inserting clip arts, pictures, tables gr presentations wizards

Introduction to internet using search engine google search explorer the net using internet explorer and net scape navigator, uploading, downloading of files and images email id creation, sending messages, attaching files in email, introduction to

“c” language, different variables, declaration usage writing small programme using function sub-functions

PRACTICAL

Typing a text and aligning the text with different formats using MS- WORD

Inserting a table with proper alignment using formulas using MS- WORD

Creating a mail merge document using MS- WORD to prepare greeting for 10 friends

Preparing a slide show with transition , animation and sound effect using MS- POWERPOINT

Customizing the slide show and inserting pictures and tables in the slides using MS- PWERPIONT

Creating worksheet using MS- EXCEL with data and use of functions.

Using MS- EXCEL prepare a worksheet with text,date,time and data

Preparing a chart and pie diagram using MS- EXCEL

Using internet for searching, uploading files,downloading files,creating-mail Using C language writing programme using function

COURSE OUTCOME:

CO1: Gain knowledge to understand the application of computers in biomedical field

CO2: Communicate, investigate and design solutions and present effectively

CO3: Organize the team research for reliable quick output

CO4: Acquire knowledge on common computer applications in health care sector

CO5: Analyse overall computer based technical skills in hospitals

	PO														
O	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
O1	2	1	2	3	2	3	3	2	3	2	3	2	2	3	3
O2	3	1	2	3	2	1	-	1	2	3	2	2	2	3	2
O3	2	3	2	3	2	3	3	2	3	-	2	2	2	2	3
O4	3	3	2	3	2	3	2	3	3	3	3	3	2	2	1
O5	1	2	2	2	2	2	2	2	2	3	2	3	0	3	3
VE	2.2	2	2	2.8	2	2.4	2	2	2.6	2.2	2.4	2.4	1.6	2.6	2.4


Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research

PAPER IX -ENGLISH

COURS ECODE	Course name	L hr s/ w k	T hr s/ w k	P hr s/ w k	Tota l hour s	IA	Theor y	Viva	Practica l	EA	Tota l
5011	ENGLISH	01	-	-	01	30	100	-	-	-	130

COURSE DESCRIPTION

This course is designed to help the students acquire an understanding of the principles and methods of communication and teaching. It helps to develop skill in communicating effectively, maintaining effective interpersonal and human relations, develop basic skills in guidance and counseling, principles of education, teaching individuals and groups in clinical, community and health educational settings.

COURSE OBJECTIVES

1. Understand the effective communication process using various communication techniques with individuals groups and health team members.
2. Establishes effective interpersonal and human relations with patients, families and health team members.
3. Acquires knowledge on concepts, principles on guidance and counseling and develop basic skills for counseling patients, nursing students and nursing personnel.

COURSE CONTENT

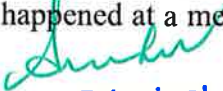
Communication :- Role of communication definition communication classification of communication purpose communication major difficulties in communication barrier communication Characteristics of successful communication “the seven CS” Communication at the workplace and communication “Mind mapping” informal communication

Comprehension passage:-Reading purposeful Understanding what is read Drawing conclusion finding and analysis

Explaining:- How to explain clearly defining and giving reasons Explaining differences Explaining procedure giving directions

Writing business letters:- how to construct correct Formal language Address salutation Body conclusion


Report Writing:-Reporting an accident reporting when happened at a session Reporting what happened at a meeting


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

COURSE OUTCOME:

- CO1: Gain knowledge on basics of English Language
- CO2: Proficiency skill in speaking and writing English
- CO3: Expertise in the phonetics of English Language
- CO4: Acquire core skills in grammar and vocabularies
- CO5: Emphasize essential skills required for effective written and oral communication and use nuances of presentation effectively

	PO														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	3	3	3	3	3	3	3	2	3	2	2	3	3
CO2	3	1	2	3	2	2	3	2	2	3	2	2	2	3	2
CO3	2	3	2	1	-	3	2	3	2	1	2	-	3	2	3
CO4	3	3	3	3	3	3	-	1	3	2	3	3	1	3	2
CO5	3	3	2	3	2	3	2	2	2	3	2	3	2	2	3
AVE	2.6	2.2	2.4	2.6	2	2.8	2	2.2	2.4	2.2	2.4	2	2	2.6	2.6


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

**Medical Lab Technology – II Year
Paper – I – Haematology & Clinical Pathology**

Training period (3 months)

COURSE CODE	Course name	L hrs/ wk	T hrs/ wk	P hrs/ wk	Total hours	IA	Theory	Viva	Practical	EA	Tot
5401	Haematology & Clinical Pathology	05	-	03	08	30	100	20	50	170	20

COURSE DESCRIPTION

The course has been designed for the diagnosis and management of blood cell disorders, anatomy and physiology of hematopoiesis, routine specialized hematology tests, analysis, classification, and monitoring of blood cell abnormalities.

COURSE OBJECTIVES

- Differentiate various hematological procedures and the use of basic equipment essential to working in a Clinical Hematology Laboratory.
- Discuss differences between Quality control, Quality Assurance, and Continuing Quality Improvement principles as used in the Hematology Laboratory.
- Categorize various hematology analyses , operational principles of various hematology instruments, and troubleshooting of various instruments.



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

COURSE CONTENT

S. No	Schedule	No. of days
1	Introduction & Blood collection	1 week
2	Preparation of blood smear Blood smears — Thin and thick Staining of thin and thick blood films Types, principles, procedure Examination of blood films	1 week
3	RBC count <ul style="list-style-type: none"> • Manual and Automatic WBC count • Total count • Differential WBC count • Morphology of different WBC • Technique of DC 	1 week
4	Absolute eosinophil count Platelets PCV or hematocrit	2 days
5	Haemoglobin — various methods of estimating Hb	2 days
6	Erythrocyte indices ESR Reticulocyte count Osmotic fragility Alkali denaturation of Hb	1 week
7	Erythropoiesis Myelopoiesis Bone marrow aspiration, smear preparation and staining Examination of bone marrow smear	1 week
8	Special stains <ul style="list-style-type: none"> • Staining for haemosiderin • Staining for leukocyte peroxidase • LE cells 	1 week
9	Anaemia <ul style="list-style-type: none"> • Definition • Classification • IDA • Megaloblastic anaemia • Aplastic anamia • Hemolytic anaemia Leukemias • Acute Lymphoblastic Leukemia • Acute Myeloid Leukemia • Chronic Myeloid Leukemia • Chronic Lymphocytic Leukemia 	1 week

10	Platelets <ul style="list-style-type: none"> • Normal hemostasis • Tests of haemostasis and coagulation • Tests of platelet function Tourniquet test Bleeding time • Disorder of platelets 	3 days
11	Theory Automation in haematology <ul style="list-style-type: none"> • Principle • Advantages • Basic interpretation of histograms • Molecular diagnosis in haematological disorder • Principle and techniques 	2 days
12	Handling of instruments and quality control	1 week
13	Urine <ul style="list-style-type: none"> • Methods of collection • Preservatives • Macroscopic examination • Chemical examination • Microscopic examination • Use of dip sticks 	1 week
14	CSF examination <ul style="list-style-type: none"> • Gross • Cytological • Differential count 	2 days
15	Cavity Fluids <ul style="list-style-type: none"> • Examinations of cavity fluids • Macroscopic • Microscopic • Cell count • Cytology 	3 days
16	Sputum examination	1 day
17	Semen analysis Examination of feces Automation in clinical pathology	3 days
18	Review and assessment	3 days

Reference :

1. Handbook of Medical Laboratory technology, Robert H, carman Christian
Medical association
2. Textbook of Medical laboratory technology by Remnik Sood

Practical in Haematology

- 1) Preparation & examination of thin and thick smear

- 2) Staining of blood smears
- 3) Supravital staining & Reticulocyte count
- 4) Bone marrow smears & Staining
- 5) Iron stain
- 6) Peroxidase stain
- 7) Recognizing & Reporting of blood pictures, normal and abnormal
- 8) Methods of measuring haemoglobin
- 9) Total RBC, WBC, Platelet count
- 10) Differential WBC count
- 11) Absolute eosinophil count
- 12) Recognition of blood parasites
- 13) Packed cell volume
- 14) ESR
- 15) LE cell preparation
- 16) Investigation of haemolytic anaemia

- Osmotic fragility
- Alkali denaturation
- Sick cell preparation
- Haemoglobin electrophoresis
- Kleihauer preparation
- Acid hemolysis test

Practical in Clinical Pathology

- 1) Complete urine Examination
- 2) Examination of CSF & reporting
- 3) Examination of Cavity, Fluids
- 4) Semen Analysis & reporting
- 5) Stool occult blood

COURSE OUTCOME:

CO1: Analyze the laboratory clinical data.

CO2: After completion of the course the technician will be able to explain the pathologic process and apply to individual patients.

CO3: Successfully manage laboratory

CO4: Describe the results of the above tests in terms of the related pathophysiology

CO5: Provide knowledge technical skills and experience in clinical pathology. This includes developing pathologic process and skills needed to interpret data.



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

CO	PO												PSO1	PSO2	PSO3
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO1	2	1	2	3	3	3	2	2	3	2	3	2	2	1	3
CO2	3	3	3	1	2	3	3	3	2	3	2	2	2	3	2
CO3	3	3	2	3	3	1	2	2	3	0	3	1	3	3	3
CO4	3	3	3	3	3	2	3	3	3	3	1	2	3	0	3
CO5	3	3	0	2	1	3	2	2	2	3	2	3	1	2	3
AVE	2.8	2.6	2	2.4	2.4	2.4	2.4	2.4	2.6	2.2	2.2	2	2.2	1.8	2.8

Paper II – Clinical Biochemistry – I

COURSE CODE	Course name	L hr s/ wk	T hrs/ wk	P hr s/ wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5402	Clinical Biochemistry – I	05	-	03	08	30	100	20	50	170	200

COURSE DESCRIPTION

The course aims to develop skills of performing basic biochemical tests important in clinical investigations, to develop familiarity with biochemical laboratory techniques, and to introduce students to various practical aspects of enzymology and their correlation in disease conditions.

COURSE OBJECTIVES

1. The student will have an understanding of the metabolic processes by which energy is produced in cells and amino acids, lipids, purines and pyrimidines, and carbohydrates are synthesized.
2. The student will be able to identify the structural elements of proteins, the basic features of enzyme catalysis and regulation, and the function of hemoglobin in oxygen binding and transport.

3. The student will be able to describe the cellular pathways by which proteins are trafficked to cellular organelles, inserted into the cell membrane, and secreted from the cell.

C.COURSE CONTENT

1. Glucose metabolism:

A. Major metabolic pathways of Glucose: Digestion and absorption of carbohydrates, Glucose metabolism, Glycolysis.

B. Other metabolic pathways of Glucose:

Glycogen metabolism: Gly.cogenesis, Glycogenolysis, Glycogen storage disorders.

2. Amino acid metabolism:

A.General amino acid metabolism: Digestion of proteins, Absorption of amino acids, Formation and disposal of ammonia, Urea cycle.

B. Creatine synthesis and degradation: Special metabolic functions of glycine, Creatine metabolism.

3. Lipid metabolism:

A.Metabolism of fatty acids: Digestion & absorption of lipids, Synthesis of fatty acids, Beta oxidation of fatty acids.

B.Cholesterol, lipoproteins and eicosanoids: Structure of cholesterol, Biosynthesis of cholesterol, Plasma lipids, Eicosanoids.

4. Heme synthesis and breakdown: Structure of heme, Biosynthesis of heme, Disorders of heme synthesis- porphyrias, Catabolism of heme, Hyperbilirubinemia.

5.Haemoglobin: Structure of haemoglobin, Transport of oxygen by haemoglobin, Transport of carbon dioxide, Fetal haemoglobin, Haemoglobin derivatives, Haemoglobin variants.

6.Clinical enzymology and biomarkers: Cardiac biomarkers: CK, Cardiac Troponins, ALT, AST, ALP, GGT, Amylase, Lipase.

7. Regulation of blood glucose & Diabetes mellitus: Regulation of blood glucose in fed & fasting state, Determination of glucose in body fluids, Hormonal influence on blood glucose level, Diabetes mellitus & its complications, Hypoglycaemia.

8. Dyslipidemia: Plasma lipid profile, Atherosclerosis & its risk factors, Hyperlipidemias:

9. Liver function tests: Functions of liver, Clinical manifestations of liver dysfunction, Markers of hepatic dysfunction.

10.Gastric and pancreatic function tests: Mechanism of HCl secretion, Regulation of acid secretion, Assessment of gastric function, Interpretation of gastric juice analysis, Assessment of pancreatic function.

11. Renal function tests: Functions of kidney, Classification of RFT, Abnormal constituents of Urine, Proteins in Urine.

12. Plasma proteins: Transport proteins, Acute phase proteins, Clotting factors, Abnormalities in coagulation.

13. Electrophoresis: Definition & instrumentation, Types of electrophoresis, Uses of electrophoresis, Electrophoresis of serum, urine & CSF.

14. Cerebrospinal fluid: Formation of CSF, Composition of CSF, Biochemical analysis of CSF

15. Mineral metabolism and abnormalities:

A. Calcium : Source, RDA, Functions, Factors regulating blood calcium level, Hypercalcemia, Hypocalcemia.

B. Phosphorous: Source, RDA, Functions, Hypophosphatemia , Hyperphosphatemia.

C. Iron: Source, RDA, Iron distribution, iron absorption & storage, Iron deficiency anemia, Iron toxicity.

16. Nucleotide metabolism: Biosynthesis & degradation of purine nucleotide, Disorders of purine metabolism, Denovo synthesis of pyrimidine, Disorders of pyrimidine metabolism.

17. Hormones: Pituitary hormones, Thyroid hormones, Hormones of adrenal-cortex and medulla, Sex hormones

PRACTICALS

1. Preparation of reagents.

2. Standardisation & estimation using spectrophotometer.

3. Quantitative estimation using semi auto analyzer:

Estimation of Glucose

Estimation of Urea

Estimation of Creatinine

Estimation of Cholesterol

Estimation of Total protein

Estimation of Bilirubin

Estimation of calcium Estimation of phosphorous

4. Estimation of sodium & potassium by flame photometer & ion selective electrodes.

5. Qualitative urine analysis of protein, glucose, bile salts, bile pigments.

Prescribed Text Books:

1. Essentials.in Biochemistry — Naik
2. Essentials in Biochemistry Gupta
3. Biochemistry simplified for BDS — Prasad R. Manjeshwar

Text books for practicals:

1. Student manual of practical and clinical Biochemistry for MBBS — Rafi
2. Varley
3. A complete workbook on clinical biochemistry P.K.Mohanty
4. Manual for practical biochemistry — S.K.Gupta

COURSE OUTCOME:

CO1: To teach students all theoretical aspects of sample collection processing and reporting .

CO2: To teach students indications for various biochemical tests

CO3: To teach students conventional and modern techniques of processing sample and obtain results .

CO4: To train students to do tests using conventional techniques as well as semi automatic and automatic machines


CO5: Understand in details the structure and physio chemical properties of carbohydrates

from monosaccharide to polysaccharide.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	2	3	3	2	3	2	2	3	3
CO2	3	2	3	3	2	3	3	3	2	2	2	2	2	3	3
CO3	3	3	2	3	3	3	2	2	3	1	3	0	3	2	2
CO4	0	2	3	2	3	3	1	2	3	2	2	2	3	2	1
CO5	2	3	3	2	1	1	2	2	2	3	2	3	3	2	3
AVE	2.2	2.6	2.6	2.6	2.4	2.6	2	1.8	2.6	2	2.4	1.8	2.6	2.4	2.4

PAPER - III
SYSTEMATIC BACTERIOLOGY, IMMUNOLOGY AND MYCOLOGY

COURSE CODE	Course name	L hrs/wk	T hrs/wk	P hrs/wk	Total hours	IA	Theory	Viva	Practical	EA	Tot


Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

5403	SYSTEMATIC BACTERIOLOGY, IMMUNOLOGY AND MYCOLOGY	05	-	03	08	30	100	20	50	170	20
------	---	----	---	----	----	----	-----	----	----	-----	----

COURSE DESCRIPTION

To give the students a sound knowledge of pathogenic microbes & their laboratory diagnosis, knowledge in Immunology and advanced serological techniques and basic knowledge in mycology

COURSE OBJECTIVES

- provide online data on the biodiversity of fungi, including lichens, especially their taxonomy, distribution, phylogeny, descriptive characters, collections, literature etc.
- inform about mycological institutions, journals, databases (link sections) and persons engaged in mycology
- facilitate interaction between databases and support the development of standards for data exchange
- reach scientists all over the world and invite them to use the platform and to help improving the quality and quantity of data
- maintain a discussion forum for mycological subjects and the further development of the platform itself

COURSE CONTENT : SYSTEMATIC BACTERIOLOGY

- Staphylococcus
- Streptococcus
- Pneumococcus
- Neisseria
- Corynebacterium
- Bacillus
- Clostridium
- Nonsporing anaerobes,
- Mycobacterium Tuberculosis
- Non —Tuberculous Mycobacteria
- Mycobacterium Leprae
- Enterobacteriaceae
- Salmonella,

- Shigella
- Vibrio
- Pseudomonas
- Yersinia
- Campylobacter, Helicobacter
- Haemophilus Bordetella, Brucella
- Spirochetes
- Actinomycetes, Nocardia
- Mycoplasma
- Rickettsia
- Chlamydia

IMMUNOLOGY

- Immunity
- Antigen
- Antibodies — Immunoglobulins
- Antigen — Antibody reactions
- Complement System
- Structure & Functions of Immune System
- Hypersensitivity
- Auto immunity
- Transplantation and Tumor Immunity
- Immunohaematology

MYCOLOGY

- Introduction & Lab Diagnosis of Fungal Infections
- Dermatophytes Opportunistic fungal infections
- Yeasts & Yeast like fungi

PRACTICALS:

1. Collection, Transportation and Processing of Clinical Samples for Microbiological techniques
2. Isolation & Identification of pathogenic bacteria
3. Preparation of antibiotic discs & antibiotic susceptibility test.
4. Maintenance of stock culture
5. Separation of sera, preservation & transport for serological test.
6. Conventional & rapid serological tests
7. Basic techniques of collection of specimens for direct examination of pathogenic fungi, KOH, lactophenol cotton blue method
8. Cultivation of fungi

COURSE OUTCOME:

CO1: Students will have knowledge of different aspects of sample collection processing and



Principal

Faculty of Allied Health Sciences
Jeevakshi Academy of Higher
Education & Research
Gurgaon, Haryana

reporting
related to various microbiological tests like smear making, staining, culturing sample and
doing
sensitivity testing

CO2: Students will know indications for various microbial tests

CO3: Students will have enough knowledge of doing tests using conventional and modern
techniques of processing sample and obtain results

CO4: Students will know classification of microbial agents, Student will have knowledge of
diagnostic techniques for microbial infections

CO5: Students will have knowledge of life cycle and pathogenesis of different microbial
organisms



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

	PO														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	2	2	3	2	3	0	2	3	3
CO2	3	3	3	2	2	3	3	3	3	3	2	2	2	3	2
CO3	3	2	1	3	3	3	2	2	3	3	3	3	3	1	2
CO4	2	0	3	3	1	3	0	3	3	1	3	2	3	0	3
CO5	1	3	3	2	1	3	3	2	2	3	2	3	1	3	2
VE	2.4	2.2	2.4	2.6	2	3	2	2.4	2.8	2.4	2.6	2	2.2	2	2.4


Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

**III Year - Medical Lab Technology Paper - I -
Histopathology and Cytology Training period (3
months)**

Course Code	Course name	L hrs / wk	T hrs /wk	P hrs / wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5404	Histopathology and Cytology	05	-	03	08	30	100	20	50	170	200

COURSE DESCRIPTION

To give the students a sound knowledge of pathogenic microbes & their laboratory diagnosis, knowledge in Immunology and advanced serological techniques and basic knowledge in mycology

COURSE OBJECTIVES

1. Be able to explain the evaluation of cell and the variety of cells occurring this progression.
2. Be able to list and define of chemical and biological components of cell contents.
3. Be able to explain structure and functions of cell membran and organells



COUR
SE
CONT
ENT

S. No	Schedule	No. of days
1	Reception and handling of specimens	3 days
2	Theory of fixation	1 day
3	Tissue processing and embedding Bit taking Theory of dehydration, Dehydrating agents, and clearing agents Wax impregnation Manual and automatic tissue processor Embedding	2 weeks
4	Section cutting Microtome— Types Microtome— Knives Sharpening of knives Care of microtomes Section cutting	2 weeks
5	Staining Theory of staining Hematoxylin and eosin Pigment removal Mounting	1 week
6	Decalcification	1 day
7	Special stains PAS Reticulin Vangieson Amyloid ., Pearl's stain Fite faracco stain AFB Masson fontanna	1 week
8	Frozen section Principle Procedure Frozen section using cryostat Advantages and disadvantages	1 week (peripheral posting)



Principal

Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

9	Immunohistochemistry	1 week
10	Theory of electron microscopy	3 days
11	Molecular techniques — PCR	3 days
12	Cytology Fixatives Stains (H&E, MGG, PAP) Identification of cells in normal vaginal smear	1 week
13	Museum techniques	4 days
14	Review and assessment	1 week

PRACTICAL IN HISTOPATHOLOGY :

1. Embedding and preparation of blocks
2. Section cutting
3. Microtomes
4. Staining

H & E

- PAS staining
- Reticulin
- Vangieson
- Amyloid stain
- Pearls stain
- Melanin bleach
- AFB staining

Reference:

- 1) Bancroft
- 2) Handbook of Medical laboratory technology, Robert H, carman, Christian Medical association.

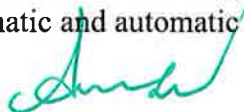
COURSE OUTCOME:

CO1: Students will have knowledge of different aspects of sample collection processing and reporting related to pathological tests

CO2: Students will know indications for various pathological tests

CO3: Students will have enough knowledge of doing tests using conventional and modern techniques of processing sample and obtain results

CO4: Students will be competant to do tests using conventional techniques as well as semi automatic and automatic machines



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078

CO5: Students will know indications of blood transfusion

CO	PO												PSO1	PSO2	PSO3
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO1	2	1	2	3	3	3	2	2	3	2	3	2	2	1	3
CO2	3	3	3	1	2	3	3	3	2	3	2	2	2	3	2
CO3	3	3	2	3	3	1	2	2	3	0	3	1	3	3	3
CO4	3	3	3	3	3	2	3	3	3	3	1	2	3	0	3
CO5	3	3	0	2	1	3	2	2	2	3	2	3	1	2	3
AVE	2.8	2.6	2	2.4	2.4	2.4	2.4	2.4	2.6	2.2	2.2	2	2.2	1.8	2.8


Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

Paper II – Clinical Biochemistry – II

COURSE CODE	Course name	L hrs/ wk	T hrs/ wk	P hrs/ wk	Total hours	IA	Theory	Viva	Practical	EA	Total
5405	Clinical Biochemistry – II	05	-	03	08	30	100	20	50	170	200

COURSE DESCRIPTION

The course aims to develop skills of performing **basic biochemical tests** important in clinical investigations, to develop familiarity with biochemical laboratory techniques, and to introduce students to various practical aspects of enzymology and their correlation in disease conditions.

COURSE OBJECTIVES

1. The student will have an understanding of the metabolic processes by which energy is produced in cells and amino acids, lipids, purines and pyrimidines, and carbohydrates are synthesized.
 2. The student will be able to identify the structural elements of proteins, the basic features of enzyme catalysis and regulation, and the function of hemoglobin in oxygen binding and transport.
 3. The student will be able to describe the cellular pathways by which proteins are trafficked to cellular organelles, inserted into the cell membrane, and secreted from the cell.
- CO5: Understand the difference between the water soluble and fat soluble vitamins and the key role in the metabolism.

COURSE CONTENT

1. **Automation:** Principle of automation, basic methods of automation, Types of automation, Integrated automation for clinical laboratory.
2. **Laboratory information system:** LIS modules, Life cycle of information system, Regulatory issues, Security & confidentiality.
3. **Quality management:** Fundamentals of total quality management, Elements of quality assurance, Total quality management of clinical laboratory, Control of pre-- analytical and

analytical variables, Control of analytical quality using stable control materials & control charts, External quality assessment.

4. Immunochemical techniques: Basic concepts, Antigen- antibody binding, Qualitative methods- Western blotting, Quantitative methods- Immunoassay, Turbidimetry & Nephelometric assays, Immunometric assays.

5. Inborn errors of metabolism:

- Disorders of amino acid metabolism: Phenylketonuria, Tyrosinemia, Homocystinuria, Maple syrup urine disease, Urea cycle defects.
- Disorders of organic acid metabolism: Isovaleric acidemia, Glutaric acidemia.
- Disorders of carbohydrate metabolism: Glycogen storage disorders, Hereditary fructose intolerance, Galactossemia. D. Disorders of fatty acid oxidation.

6. Therapeutic drug monitoring: Basic concept of TDM, Analytical considerations of TDM, Specific drug groups, Clinical applications.

7. Molecular biology:

A. Deoxyribonucleic acid: Structure of DNA, Replication of DNA, Dna repair mechanisms.

B. Transcription : Ribonucleic acid, Transcription process.

C. Genetic code & Translation: Protein biosynthesis, Translation pthcess.

D. Control of gene expression: Mutations, Classification of mutations, Cell cycle, Regulation of gene expression, Defects arising f rom genetic mutatio n- Fa miliary hypercholesterolemia, Cystic fibrosis.

E. Recombinant DNA technology & Gene therapy: Recombinant DNA technology, Vectors, Gene therapy, Stem cells.

F. Molecular diagnostics & Genetic techniques: Hybridization & blot techniques, Polymerase chain reaction.

8. Biochemistry of Cancer: Cancer etiology, Oncogenes, Oncogeneic viruses, Mutagens, Carcinogens, Tumor markers. AFP, CEA, PSA,13-HCG, VMA, CA-125,13-2-microglobulin, Bence Jones Protein.

PRACTICALS

1. Chromatography
2. Electrophoresis
3. ELISA
4. Organ function tests:
 - Liver function tests: SGOT, SGPT, ALP, GGT, Total bilirubin, Direct bilirubin, Total protein, Albumin.
 - Renal function tests: Urea, Creatinine.
 - Lipid profile: Total cholesterol, Triglycerides, HDL, LDL, VLDL.
 - Thyroid function tests: fT3, fT4, TSH. Cardiac profile: CK, CK -MB, LDH, Troponin-T.
 - Tumor markers: AFP, CEA, PSA,13-HCG, CA-125
5. Other analytes: Calcium, Phosphorous, Uric acid, Amylase, Lipase.
6. Electrolytes: Sodium, Potassium, Chloride, Bicarbonate. Urine analysis: 24 his protein,

Urobilinogen, Bilirubin

7. Urine analysis: 24 his protein, Urobilinogen, Bilirubin

COURSE OUTCOME:

CO1: Students will have knowledge of different aspects of sample collection processing and reporting

CO2: Students will know indications for various biochemical tests

CO3: Students will have enough knowledge of doing tests using conventional and modern techniques of processing sample and obtain results

CO4: Students will be competent to do tests using conventional techniques as well as semi automatic and automatic machines

CO	PO												PSO1	PSO2	PSO3
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO1	2	1	2	3	2	3	3	2	3	2	3	2	2	3	3
CO2	3	1	2	3	2	1	0	1	2	3	2	2	2	3	2
CO3	2	3	2	3	2	3	3	2	3	0	2	2	2	2	3
CO4	3	3	2	3	2	3	2	3	3	3	3	3	2	2	1
CO5	1	2	2	2	2	2	2	2	2	3	2	3	0	3	3
AVE	2.2	2	2	2.8	2	2.4	2	2	2.6	2.2	2.4	2.4	1.6	2.6	2.4


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

Paper – III
VIROLOGY, PARASITOLOGY & CLINICAL MICROBIOLOGY

COURSE CODE	Course name	L	T	P	Total hours	IA	Theory	Viva	Practical	EA	Total
5406	VIROLOGY, PARASITOLOGY & CLINICAL MICROBIOLOGY	05	-	03	300	30	100	20	50	-	20

COURSE DESCRIPTION

The research at the department of Microbiology is aimed at studying the diversity and activity of microorganisms in their natural environment, their mutual interactions and their survival and adaptation strategies.

COURSE OBJECTIVES

1. To understand the key concepts in food and dairy microbiology
2. To gain knowledge on various methods of microbial analysis of food and dairy products
3. To learn various statistical methods of data analysis.

VIROLOGY

- Basics of Virology-Morphology, Lab diagnosis of viral infection
- Bacteriophage
- Poxviruses
- Herpesviruses
- Adenoviruses
- Picornaviruses
- Orthomyxoviruses Paramyxoviruses
- Paramyxio viruses

[Signature]
Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

- Arboviruses
- Rhabdo Viruses
- Hepatitis Viruses
- Retroviruses : HIV
- Oncogenicviruses

PARASITOLOGY

- General Introduction – Parasitology
- Protozoa — Amoeba, Flagellates, Sporozoa , Ciliates
- Helminthes — Cestodes, Trematodes , Nematodes
- Helminthes — Nematodes
- Diagnostic Methods in Parasitology

CLINICAL MICROBIOLOGY

- Normal Microbial Flora of the Human Body
- Infective Syndromes: Laboratory Diagnosis
- Health Associated Infection
- Prophylactic Immunisation
- Bio Medical Waste Management
- Bacteriology of Air, Milk, Water
- Recent Advances in Diagnostic Microbiology

PRACTICAL

- Demonstration of Ova & cysts in stool — Saline & Iodine mount
- Concentration techniques
- Lab diagnosis of viral infection — Rapid test for HbsAg , HIV, HCV, Dengue, Chikungunya
- ELISA technique

Prescribed Text Book:

1. Text Book of Microbiology —
Anantha Narayanan Paniker — 9th Edition
2. Text Book of Microbiology for MLT— Dr.C.P.Baveja — 2nd Edition
3. Paniker Text Book of Medical Parasitology 7th

COURSE OUTCOME:

CO1: Evaluate standards for specimen collection, specimen integrity in the pre-analytical, analytical and post-analytical delivery of patient care in microbiology.

CO2: Compare and contrast the general characteristics and the antigenic properties of gram negative bacteria.

CO3: Summarize treatment strategies, expected antibiotic susceptibility results, and emerging

resistance for gram negative bacteria

CO4: The student will be able to evaluate methods used to identify infectious agents in the clinical microbiology lab.

CO5: The student will be able to recall microbial physiology including metabolism, regulation and replication.

PO														
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
2	1	2	3	3	3	2	2	3	2	3	2	2	1	3
3	3	3	1	2	3	3	3	2	3	2	2	2	3	2
3	3	2	3	3	1	2	2	3	0	3	1	3	3	3
3	3	3	3	3	2	3	3	3	3	1	2	3	0	3
3	3	0	2	1	3	2	2	2	3	2	3	1	2	3
2.8	2.6	2	2.4	2.4	2.4	2.4	2.4	2.6	2.2	2.2	2	2.2	1.8	2.8



Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

COURS ECODE	Course name	L	T	P	Total hours	IA	Theory	Viva	Practical	EA	Tot:
5407	COMMUNITY MEDICINE	05	-	-	05	30	100	-	-	100	130

ELECTIVES (SELECT ONE)

COMMUNITY MEDICINE

COURSE DESCRIPTION

The course deals with population or groups rather than individual patients. It is concerned with identification and assessment of health needs of the people, health problems affecting them and to devise appropriate measures

COURSE OBJECTIVES:

To demonstrate an understanding of the influence of social and environmental factors on the health of the individual and society.

To demonstrate an understanding of the principles of first aid and demonstrate skill in giving first aid treatment in emergencies that may be met in the community and in their practice as therapists.

COURSE CONTENT:

Outline the natural history of diseases and the influence of social, economic and cultural aspects of health

and diseases.

Outline the various measures of prevention and methods of intervention especially for diseases with disability.

Outline the national care delivery system and the public health administration system and the central and state level, local trends and resource.

Outline selected national health programmes including current programmes (Eg. SSA Sarva Siksha Abhiyan)

Define occupational health and list methods of prevention of occupational diseases and hazards.

Outline the Employees State Insurance scheme and its various benefits.

Describe the social security measures for protection from occupational hazards, accidents, diseases, and the workman's compensation act.

Outline the objectives and strategies of the national Family Welfare Programme

Define community based and institution based rehabilitation. Describe the advantage and disadvantages of institution and community based rehabilitation.

Describe the following communicable diseases with reference to reservoir, mode of transmission, route of entry and levels of prevention. a.

92 Polio myelitis, b. Meningitis, c. Encephalitis, d. Tuberculosis, e. Filariasis, f. Leprosy, g. Tetanus & h. Measles.

Describe the epidemiology of rheumatic heart disease, cancer, Chronic degenerative disease and cerebrovascular accidents.

Outline the influence of nutritional factors such as protein Energy Malnutrition, Anaemia, Vitamin deficiency and minerals on disability.

List the principles of health education, methods of communication and role of health education in rehabilitation services.

Define the role of community leaders and health professionals in health education.

Outline the role of international health agencies in rehabilitation of the disabled.

Identify and give first aid in burns, fire accidents, road accidents, poisoning, drowning, insect bites and trauma due to a foreign body.

Identify various fractures and practice bandaging and splinting in care of fractures.

Describe the types of wounds, haemorrhages, shock and respiratory emergencies.

Reference Books:

First Aid Manual: St John Ambulance

COURSE OUTCOME:

CO1 provide comprehensive health care to the people


CO2 deliver primary health care and essential services package

CO3 conduct epidemiological studies on common health problems

CO4 provide health care with appropriate attitudes

CO	PO												PSO1	PSO2	PSO3
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO1	3	1	3	3	1	3	2	2	3	2	1	2	2	3	3
CO2	3	2	3	3	3	2	3	3	2	2	2	2	2	3	2
CO3	0	3	2	3	2	3	3	3	1	1	3	2	2	3	3
CO4	2	3	0	2	3	0	2	3	0	3	3	3	0	1	1
CO5	2	3	3	1	2	3	2	2	3	3	2	3	3	2	2
AVE	2	2.4	2.2	2.4	2.2	2.2	2.4	2.6	1.8	2.2	2.2	2.4	1.8	2.4	2.2

CO5 work as a member of health team, co-ordinate with national and international health organizations and national health programmes


Principal
 Faculty of Allied Health Sciences
 Meenakshi Academy of Higher
 Education & Research
 Chennai - 600 078.

COURS ECODE	Course name	L	T	P	Total hours	IA	Theory	Viva	Practical	EA	To
5408	CLINICAL PSYCOLOGY	05	-	-	05	30	100	-	-	100	130

CLINICAL PSYCHOLOGY

COURSE DESCRIPTION

The course aims to provide students with the bases in clinical physiology and associated methodology required to perform parts in placement training and at clinical physiological laboratories.

COURSE OBJECTIVES

- To develop in depth knowledge on specific psychological factors and effects in physical illness and thus help them to have a holistic approach to their dealings with patients during admission, treatment, rehabilitation, and discharge
- To develop exhaustive ideology of various Identify ego defense mechanisms and learn counseling techniques to help those in need. And help them to understand the reasons of non-compliance in patients and improve compliance behavior.

COURSE CONTENT

DEFINITION OF PSYCHOLOGY

Basic information in relation to following schools methods and branches.
 a. Schools: Structuralism, functionalism, behaviorism, psychoanalysis, gestalt psychology, Methods, Branches, heredity and environment c. developmental theories and growth behaviour at Infancy, Early childhood, Middle childhood, Puberty (physiological and psychological changes), adulthood, middle age, and old age.

intelligence, motivation Social motives, emotions Definition.
b.personality: Definition, concepts, creativity, steps in creative thinking; problem solving, decision making, list the traits of creative people, delusions ,frustration - Definition sources, solution, conflict; Approach - approach, avoidance-avoidance, and approach - avoidance, solution


DEFINITION OF CLINICAL PSYCHOLOGY: General and historical introduction to Abnormal Psychology, Psychology in relation to medicine, different schools. Methods of Clinical Psychology: Case History method, Interview Techniques, Clinical observation, Situational tests, Questionnaires. Concepts of normality and abnormality: Causes of abnormality, Criteria for abnormality. Broad classification of Current model of abnormal behavior - Medical model, Psychodynamic model, Behavioristic model & Humanistic model , and Cognitive model Functional units of mind: Id, ego and super ego - their functions and interactions. Role of Defense mechanisms in normal and abnormal behavior. Evaluation of attention and concentration, perception, memory, thinking etc. Intelligence and Mental Retardation: Intelligence test - .Measurement of intelligence - children & adults (demonstrations)Mental Retardation and it's psychosocial management. Personality Assessment: Questionnaires, inventories, projective techniques Behavior techniques in Therapy -application of

learning principles to modify behaviour. Counselling: Definition, Aim, Difference between counselling and guidance, principles in counselling, personality qualities of counsellors Psychotherapy: Basic Principles

HEALTH PSYCHOLOGY-Psychological reactions of a patient: reaction to loss, communications ,compliance ,emotional need geriatric psychology specific psychological reactions and needs of geriatric patients c. pediatric psychology - specific psychological reactions and needs of pediatric patients, . substance abuse -psychological aspects of substance abuse: smoking, alcoholism, and drug addiction. compliance -nature, factors contributing to non-compliance, methods of improving compliance. f. emotional needs g. geriatric psychology -specific psychological reactions and needs of geriatric patients. h. paediatric psychology - specific psychological reactions and needs of paediatric patients. k. substance abuse -psychological aspects of substance abuse: smoking, alcoholism, and drug addiction. l. personality styles - different personality styles of patients

Recommended Book(s) for Reference include:

1. Introduction to Psychology by Morgan and King
- 2 Psychology for Physiotherapists by Thangamani Ramalingam and Dibyendunarayan Bid


Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai - 600 078.

CO	PO												PSO1	PSO2	PSO3
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
CO1	2	1	2	3	2	3	3	2	3	2	3	2	2	3	3
CO2	3	1	2	3	2	3	3	2	2	3	2	2	2	3	2
CO3	2	0	2	0	2	3	2	2	3	3	2	0	3	2	3
CO4	3	3	2	3	2	3	0	2	3	3	2	3	2	3	2
CO5	2	3	2	3	2	3	2	2	3	3	2	3	2	3	3
AVE	2.4	1.6	2	2.4	2	3	2	2	2.8	2.8	2.2	2	2.2	2.8	2.6

COURSE OUTCOME:

CO1. The student is expected on completion of the course independently be able to carry out a diagnostic ECG and a simple spirometry.

CO2. show active participation in work tests

CO3. with reasonable safety interpret the most common ECG and spirometry findings.

CO4. be able to apply safety and hygiene procedures at clinical physiological and nuclear medical work.

CO5. be able to orally and in writing present compiled results of completed studies.

COPO MAPPING FOR B.Sc AHS MEDICAL LAB TECHNOLOGY (PROG.CODE-703)

COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
5001	2	2.4	2	2.4	2	2.8	2	2.2	2.2	2.2	2.4	1.8	2.2	2.8	2.8
5002	2.2	1.8	2	2.4	2.2	2.2	2	2.4	2.8	2.2	1.8	2	2.4	2.2	2
5003	2	2.8	1.8	2.6	2	2.6	1.8	2	2.6	2.6	2	2	2.2	2.4	2.4
5004	2.2	2.6	2.6	2	2.4	2.4	2	1.8	2.4	2	2	2.2	2.4	2.6	2.2
5005	1.8	2.4	2.2	2.4	2.4	2.6	2	2	2	2.4	2	2.6	2	2.6	2.8
5006	2.2	2.6	2.6	2	2.4	2.4	2	1.8	2.4	2	2	2.2	2.4	2.6	2.2
5009	2.2	2.6	2.6	2	2.4	2.4	2	1.8	2.4	2	2	2.2	2.4	2.6	2.2
5010	2.2	2	2	2.8	2	2.4	2	2	2.6	2.2	2.4	2.4	1.6	2.6	2.4
5011	2.6	2.2	2.4	2.6	2	2.8	2	2.2	2.4	2.2	2.4	2	2	2.6	2.6
5401	2.8	2.6	2	2.4	2.4	2.4	2.4	2.4	2.6	2.2	2.2	2	2.2	1.8	2.8
5402	2.2	2.6	2.6	2.6	2.4	2.6	2	1.8	2.6	2	2.4	1.8	2.6	2.4	2.4
5403	2.4	2.2	2.4	2.6	2	3	2	2.4	2.8	2.4	2.6	2	2.2	2	2.4
5404	2.8	2.6	2	2.4	2.4	2.4	2.4	2.4	2.6	2.2	2.2	2	2.2	1.8	2.8

5405	2.2	2	2	2.8	2	2.4	2	2	2.6	2.2	2.4	2.4	1.6	2.6	2.4
5406	2.8	2.6	2	2.4	2.4	2.4	2.4	2.4	2.6	2.2	2.2	2	2.2	1.8	2.8
5407	2	2.4	2.2	2.4	2.2	2.2	2.4	2.6	1.8	2.2	2.2	2.4	1.8	2.4	2.2
5408	2.4	1.6	2	2.4	2	3	2	2	2.8	2.8	2.2	2	2.2	2.8	2.6



Principal
Faculty of Allied Health Sciences
Meenakshi Academy of Higher
Education & Research
Chennai