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Dr. M.B. ASWATH NARAYANAN, B.Sc., M.D.S.,
REGISTRAR

Ref. No. AC IV (1)/38433/2021 Dated:02.09.2021

To:

The Principal of Affiliated AHS -PG Degree
and Diploma Colleges

Sir/Madam,

Sub:	Academic – The Tamil Nadu Dr.M.G.R. Medical University, Chennai – Resolution of Standing Academic Board in AHS– PG Degree and Diploma Courses held on 29.04.2021 – Communicated – Reg.
Ref: 1	Minutes of the Board of Studies meeting held on 15.04.2021 for AHS – PG Degree and Diploma Courses.
2	Minutes of the 60th Standing Academic Board meeting held on 29.04.2021.
3	Resolution No.60, passed by the Governing Council in its 282nd meeting held on 19.07.2021

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I am to inform you that the minutes of the meeting of the Board of Studies in AHS - PG Degree and Diploma Courses held on 15.04.2021 was recommended by the Standing Academic Board, at the 60th meeting held on 29.04.2021. The following recommendations of the Standing Academic Board was approved by the Governing Council at the 282nd meeting held on 19.07.2021. The Standing Academic Board has resolved that:

POINT NO.1

To approve the minutes of the Expert Committee meeting held on 12-10-2020 with modification that moderation mark to a maximum of 2 subjects and maximum of 5 marks in each subject in AHS PG Degree and Diploma course, only in theory paper and to implement from May 2021 Examination session onwards.

POINT NO. 2

To approve the Recommendations of Expert Committee with regard to modification of existing Eligibility Criteria and Syllabus of M.Sc., Nuclear Medicine Technology course and to implement from the Academic Year 2020- 2021 onwards.

MINUTES OF THE EXPERT COMMITTEE MEETING:

The Expert Members discussed on the existing Regulation of M.Sc., Nuclear Medicine Technology Courses and suggested to modify the overall objectives in the regulation and Eligibility Criteria for admission to M.Sc., Nuclear Medicine Technology. The members suggested to have the following as eligibility criteria :

1) Bsc Nuclear Medicine Technology
2) Bachelor Degree in Science with DMRIT

(As per the latest AERB Norms for Nuclear Nuclear Medicine Technology Qualifications)

Further, the members opined that the institution which offers MSc Nuclear Medicine Technology course should have an in house Medical Cyclotron and also directed to include in the list of equipments, if not the institution should have an MOU with another institution which has Medical Cyclotron as per AERB norms. The institution should also share the technical details to the inspection team.

POINT NO. 3

To approve the recommendations of the Expert Committee with regard to the scheme of Practical Examination for M.Sc.,Radiography and Imaging Technology.

MINUTES OF THE EXPERT COMMITTEE MEETING:

SCHEME FOR PRACTICAL EXAMINATION FOR M.Sc.,(Radiography and Imaging Technology)

- Practical Examinations will be conducted in five stations with each having one to two parts.
- Part I will be five to eight OSCE questions based on the syllabus.
- Part II will be practical demonstration, questions based on the syllabus.
- Advise to download syllabus for MSc (Radiography and Imaging Technology) from www.tnmgrmu.ac.in to get a list of topics for each station.

FIRST YEAR SCHEME FOR PRACTICAL EXAMINATION

I PRACTICAL	5 STATIONS X 16 MARKS	80 MARKS
II VIVA		20 MARKS
TOTAL		100 MARKS

Passing Minimum - 50 Marks

STATION I - Radiological Physics
OSCE - 8 STATIONS X 2 MARKS = 16 MARKS

STATION II – Conventional Radiological and Imaging Equipments
I) OSCE - 5 STATIONS X 2 MARKS = 10 MARKS
II) PRACTICAL – 1 x 6 MARKS = 6 MARKS

STATION III – Radiographic and Imaging Techniques

I) OSCE - 5 STATIONS X 2 MARKS = 10 MARKS

II) PRACTICAL – 1 x 6 MARKS = 6 MARKS

STATION IV – Radiation Safety and Protection

I) OSCE - 5 STATIONS X 2 MARKS = 10 MARKS

II) PRACTICAL – 1 x 6 MARKS = 6 MARKS

STATION V – Modern Radiological and Imaging Equipment

I) OSCE - 5 STATIONS X 2 MARKS = 10 MARKS

II) PRACTICAL – 1 x 6 MARKS = 6 MARKS

Sample list of practical question in each station in First Year.

(Note: Use patients referred to department for investigation on day of examination or use phantom if patient unavailable)

STATION – II

Demonstrate the parts and uses of any one equipment – mobile x-ray, Mammography Unit, Flouroscopic unit.

1. Demonstrate methods of controlling scattered radiation on any one – Bedside x-ray, Abdomen x-ray.

STATION – III

1) Take any one X-ray for patient – Conventional/Special view

STATION IV

1) Calibrate the given machine using phantom
Either X-ray/CT Equipment.

2) Quantify /measure the exposure from a given machine –
Chest x-ray, abdomen x-ray etc.

STATION V

1) Demonstrate how you will position and take an image in any of the following equipment:

CT, IITV, DEXA

2) Demonstrate your knowledge of knobology in USG eg TCC, Brightness. Choose Doppler settings, how to alter settings for a particular study etc, identify the probes, probe disinfection.

List of OSCE topics for each station in First Year

STATION I - Radiological Physics – 8 questions
STATION II – Conventional Radiological and Imaging Equipment-5 questions
STATION III – Radiographic and Imaging Techniques - 5 questions
STATION IV – Radiation Safety and Protection- 5 questions
STATION V – Modern Radiological and Imaging Equipment – 5 questions

THIS WILL COME INTO EFFECT FROM ACADEMIC YEAR 2020-2021 ADMISSION ONWARDS.

SECOND YEAR SCHEME OF EXAMINATION

I PRACTICAL	5 STATIONS X 16 MARKS	80 MARKS
	VIVA	20 MARKS
TOTAL		100 MARKS
Passing Minimum		50 Marks
II.PROJECT	PROJECT BOOK AND LOG BOOK	50 MARKS
	PROJECT PRESENTATION AND DISCUSSION	50 MARKS
TOTAL		100 MARKS
Passing Minimum		50 Marks
III.INTERNAL ASSESSMENT		50 MARKS
Minimum		50 Marks
GRAND TOTAL		250 MARKS
Passing Minimum		125 Marks

Practical I

STATION I - Radiological and Imaging Procedures
I) OSCE - 5 STATIONS X 2 MARKS = 10 MARKS
II) PRACTICAL – 1 x 6 MARKS = 6 MARKS

STATION II –Conventional Assurance and Quality Control in Diagnostic Radiology and Imaging
I) OSCE - 5 STATIONS X 2 MARKS = 10 MARKS
II) PRACTICAL – 1 x 6 MARKS = 6 MARKS

STATION III – Newer Imaging Modalities
I) OSCE - 5 STATIONS X 2 MARKS = 10 MARKS
II) PRACTICAL – 1 x 6 MARKS = 6 MARKS

STATION IV – Intervention Radiological Techniques and patient care
I) OSCE - 5 STATIONS X 2 MARKS = 10 MARKS
II) PRACTICAL – 1 x 6 MARKS = 6 MARKS

STATION V – Newer Developments in Advance Imaging Technology and Biostatistics
I) OSCE - 8 STATIONS X 2 MARKS = 16 MARKS

Sample list of practical question in each station for Second year.

(Note: Use patients referred to department for investigation on day of examination or use phantom if patient unavailable)

STATION I - Radiological and Imaging Procedures

1) Prepare Emergency Drug Tray from given drugs and explain uses of each for any one :
   a) contrast reaction
   b) contrast extravasation

2) Position and do any conventional contrast study eg Barium swallow, Barium Meal, IVP

STATION II – Conventional Assurance and Quality Control in Diagnostic Radiology and Imaging

1. Do quality assurance check for any one of the following :
a) Lead apron
b) X-ray tube
c) CT Machine

2) Demonstrate how you will check the quality of given cassette and method of cleaning it.
3) On available CT study demonstrate how to calculate patient effective dose.
4) Calculate the risk of radiation exposure in a pregnant woman for abdominal CT/X-ray and advise regarding outcome.

STATION III – Newer Imaging Modalities

1. Demonstrate on available studies any of the following post processing techniques – MIP, SSD, VRT,Virtual Bronchoscopy/Colonoscopy.
2. Demonstrate patient preparation, positioning and planning of any two sequence for a patient referred for MRI study.
3. Demonstrate pre imaging history taking, positioning and CT imaging technique in a paediatric patient referred for investigation.

STATION IV – Intervention Radiological Techniques and patient care

1. Patient positioning and demonstration of any one study on C- arm/DSA equipment- Cerebral angiogram, abdominal angiogram, PTBD.
2. Set tray for any one procedure a) Ultrasound/CT guided biopsy.
   b) Ultrasound / CT guided percutaneous drainage procedure.

List of OSCE topics for each station in Second Year
STATION I - Radiological and Imaging Procedures - 8 questions

STATION II – Conventional Assurance and Quality Control in Diagnostic Radiology and Imaging – 5 questions

STATION III – Newer Imaging Modalities - 5 questions

STATION IV – Intervention Radiological Techniques and patient care – 5 questions

STATION V – a) Newer developments in Advanced Imaging Technology – 5 questions.

b) Biostatistics – 3 questions.

THIS WILL COME INTO EFFECT FROM ACADEMIC YEAR 2019-2020 ADMISSION ONWARDS.

External Examiner Qualifications & Experience for First & Second Year

MD (Radiodiagnosis)
From affiliated institutions
Year of experience : Six Years
Practical Examinations to be conducted for maximum five candidates per day.

POINT NO.4

To approve the recommendations of the Expert Committee with regard to the scheme of Practical Examination for M.Sc., Nuclear Medicine Technology.

MINUTES OF THE EXPERT COMMITTEE MEETING:

I. SCHEME OF PRATICAL EXAMINATIONS FOR FIRST YEAR M.Sc.,NUCLEAR MEDICINE TECHNOLOGY

The Experts recommended to conduct the practical examination as follows:

Major experiments	- 1 x 30 marks	= 30 marks
Minor experiments	- 2 x 20 marks	= 40 marks
Spotters	- 5 x 2 marks	= 10 marks
	Viva	= 20marks
	Total	= 100 Marks

Passing minimum = 50 Marks

List of Major Experiments

1) Dead time and resolving time of G.M Counter
2) Half value layer of y emitters and range of b emitters
3) Resolution of half-lives from a mixture of radionuclides
4) Efficiency of counting system
5) Gamma ray spectrometry -calibration, spectrum, energy resolution, linearity
6) Study and calibration of energy dependence of a pocket dosimeter and survey meter.

List of Minor Experiments:

1. Spectrum of mixture of two isotopes and scatter fraction.
2. Radiation exposure: effect of distance, time & shielding.
3. Identification of unknown radionuclides.
4. Characteristics of different radiation.

5. Absorption of back-scatter of radiation.
6. Half life of radioisotopes.
7. Daughter-parent relationship of radioactive decay and radionuclides.
8. Plateau of G.M Counter.

External Examiner Qualifications & Experience:

MD (Nuclear Medicine)
MD (General Medicine) with DRM MD
(Radiotherapy) with DRM
MD (Radiodiagnosis) with DRM

From affiliated institutions
Year of experience : Six Years
Practical Examinations to be conducted for maximum five candidates per day.

This will come into effect from Academic Year 2020-2021 admission onwards.

II. SCHEME OF PRATICAL EXAMINATIONS FOR SECOND YEAR M.Sc., NUCLEAR MEDICINE TECHNOLOGY

The Experts recommended to conduct the practical examination as follows:

Major experiments	- 1 x30 marks = 30 marks
Minor experiments	- 2 x20 marks = 40 marks
Spotters -	- 5 x2 marks = 10 marks
Viva	= 20 marks
Total	= 100 Marks

Passing minimum = 50 Marks

LIST OF MAJOR EXPERIMENTS:

1) Line spread function of collimators
2) Phantom studies for scintigraphy
3) Radiopharmacy procedure, elution of generators, preparation of different radiopharmaceuticals
4) Organ imaging
5) Renogram
6) Thyroid uptake unit and collimator response
7) Formulation Tc compounds from kits
8) Determination of Mo breakthrough in 99mTc
9) Q.C of Dose Calibrator
10) Q.C of Gamma Camera
11) Q.C of SPECT
12) Q.C of radio pharmaceuticals by paper chromatography
13) Q.C of PET radio pharmaceuticals by TLC scanner, HPLC & Gas chromatography
14) Rapid determination of Radiochemical purity of radiopharmaceuticals.
15) Pre and Post I-therapy imaging and patient preparation.

LIST OF MINOR EXPERIMENTS:

1) Isoresponse curve of different collimators
2) Radiation survey of nuclear medicine lab
3) Contamination levels and methods of decontamination
4) In-vitro sample measurement of various types
5) Jaszczak Phantom
6) Line spread function of collimators
7) Phantom studies for scintigraphy
8) Radiopharmacy procedure, elution of generators, preparation of different radiopharmaceuticals
9) Organ imaging
10) Renogram
11) Thyroid uptake unit and collimator response
12) Formulation Tc compounds from kits
13) Determination of Mo breakthrough in 99mTc
14) Q.C of Dose Calibrator
15) Q.C of Gamma Camera
16) Q.C of SPECT
17) Q.C of radiopharmaceuticals by paper chromatography
18) Q.C of PET radiopharmaceuticals by TLC scanner, HPLC & Gas chromatography
19) Rapid determination of Radiochemical purity of radiophamaceuticals.
20) Pre and Post I- therapy imaging and patient preparation.

External Examiner Qualifications & Experience:

MD (Nuclear Medicine)
MD (General Medicine) with DRM
MD (Radiotherapy) with DRM
MD (Radiodiagnosis) with DRM
From affiliated institutions
Year of experience : Six Years
Practical Examinations to be conducted for maximum five candidates per day.

This will come into effect from Academic Year 2019-2020 admission onwards.

POINT NO.5

To approve the recommendations of expert committee in framing syllabus for "Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics" in M.Sc.,Respiratory Therapy Syllabus.

To have "Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics" as a common paper in first year, as Paper I for all M.Sc., (excluding M.Sc., Biostatistics, M.Sc., Epidemiology and M.Sc., Public Health) & M.Phil Courses under PG Degree Allied Health Sciences and this will not be applicable for council recognized courses.

To follow the above recommendations of having "Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics" as a single common theory paper for Masters in Hospital Administration, M.Sc., Molecular Virology, M.Optom courses as well and **to implement the same from Academic Year 2020-2021 admission onwards.**

MINUTES OF THE EXPERT COMMITTEE MEETING:

The Expert Members reviewed the existing syllabus of M.Sc (Respiratory Therapy) and suggested for modification as per the annexure enclosed.

SYLLABUS for Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics :-

UNIT I: EPIDEMIOLOGY

Introduction: Historical aspects and evolution of epidemiology, definitions and concepts in Epidemiology.

Natural history of disease. Approaches in Epidemiology. Descriptive and Analytical Epidemiology, Disease burden and Measures of risk and death. Epidemiological Investigations.

UNIT-II – RESEARCH METHODOLOGY

Principles of Research study designs, Sampling Methods, Sample size Estimation, Protocol writing and Measures of Association.
Introduction to Operations Research.

UNIT III: BIOSTATISTICS

Fundamentals of Biostatistics: Introduction, Types of data, Tabular and graphical presentation of data. Measures of location, dispersion and correlation: Measures of central tendency. Mean, mode, median, GM, HM, quartiles Measures of dispersion— Range, Standard Deviation, Variance, Coefficient of Variation.

Probability and statistical inference: Concept and probability distribution. Normal distribution— density curves, applications and statistical tables. Concept of significance tests, parametric and nonparametric tests, standard error and confidence intervals.

Inferential statistics: Probability and distributions – Poisson, Binomial and Normal distribution – Chi-square test – Hypothesis test - Student's t-test – Correlation and Regression – ANOVA.

UNIT IV: MEDICAL ETHICS

Bioethics and Medical ethics: Historical perspectives & Introduction to Bioethics, Nuremberg Code, Declaration of Helsinki, Principle of essentiality, informed consent, confidentiality, minimisation of risk, accountability and responsibility. Ethics of clinical trials: Drug trials, vaccine trials, Clinical Trials with medical devices/surgical procedures/radioactive materials, Research in transplantation and stem cell therapy. Regulatory framework and guidelines for conduction of human research: Review processes, Institutional ethical committees, composition of committees, review procedures, WHO, UNESCO and ICMR guidelines.

References :

1. Epidemiology: An Introduction. Kenneth J. J. Rothman. Latest edition / Pub. Date: May 2002. Publisher: Oxford University Press.
2. Epidemiology. Leon Gordis. Latest edition / Pub. Date: November 2004. Publisher: Elsevier Health Sciences.
3. Diseases and Human Evolution. Ethne Barnes. Latest edition / Latest edition / Pub. Date: March 2005. Publisher: University of New Mexico Press.

4. Epidemiology: Beyond the Basics. F. Javier Nieto, Moyses Szklo. Latest edition / Pub. Date: November 2003. Publisher: Jones & Bartlett Publishers, Inc.
5. Basic and Clinical Biostatistics. Beth Dawson, Robert G. Trapp, Robert Trapp. Latest edition / Pub. Date: March 2004.
6. Discovering Statistics Using SPSS. Andy Field. Latest edition / Pub. Date: April 2005. Publisher: SAGE Publications.
7. Arora PN & Malhon PK (1996). Biostatistics Imalaya Publishing House, Mumbai.
8. Sokal & Rohif (1973). Introduction to Biostatistics, Toppan Co. Japan.
9. Stanton A & Clantz, Primer of Biostatistics — The McGraw Hill Inc., New York.
10. Government of India. Good Clinical Practices for Clinical Research in India. New Delhi: 2001
11. Indian Council of Medical Research. Ethical Guidelines for Biomedical Research on Human Subjects. New Delhi: 2000
12. United Nations Educational, Scientific and Cultural Organisation (UNESCO). Universal Declaration on Bioethics and Human Rights. Paris; 2005

POINT NO.6

To ratify the inclusion of Eligibility Criteria for admission to the Post Graduate Diploma in Diabetes Education Programme from the Academic Year 2020-21 admission onwards.

1. All B.Sc Life Sciences related courses
2. B.Pharm
3. Bachelor of Physiotherapy
4. Bachelor of Occupational Therapy
5. B.Sc Nutrition, Food Service Management and Dietetics
6. B.Sc Clinical Nutrition & Dietetics
7. B.Sc Food & Nutrition
8. B.Sc Nutrition, Dietetics & Food Science service Management
9. B.Sc Food Science and Nutrition

Further, I am also to request that the decision of the Standing Academic Board as mentioned above be communicated to all the Professors and Head of the Departments of your institution for information and a copy of this letter be displayed on the Notice Board of the College / Hostel for the information of the students.

The receipt of this letter be acknowledged immediately.

Sd/-
REGISTRAR

Copy to:
1. The Academic Officer (FAC)
2. The Controller of Examinations
3. The Course i/c.,
4. P.S. to Vice Chancellor
5. P.S. to Registrar
6. The System Analyst (UCC)
7. Stock File
8. Spare