BLDE
(DEEMED TO BE UNIVERSITY)

Competency Based Medical Education
(CBME)

PG CURRICULUM
2019-20
MD Physiology

Published by
BLDE
(DEEMED TO BE UNIVERSITY)
Declared as Deemed to be University u/s 3 of UGC Act, 1956

The Constituent College
SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH CENTRE, VIJAYAPURA
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BLDE(DU)/REG/PG-Curr/2019-20/268 May 06, 2019

NOTIFICATION

Sub: Competency Based Medical Education (CBME) based Revision of Post Graduate Curriculum

Ref: 1. Medical Council of India Regulation on Graduate Medical Education, 1997 and subsequent amendments of the same from time to time.
2. Minutes of the 28th meeting Academic Council of the University held on April 26, 2019.
3. Minutes of the 47th meeting Board of Management held on May 04, 2019.

The Board of Management of the University is pleased to approve the CBME based Revised Curriculum for Post Graduate Degree Course at in its 47th meeting held on May 04, 2019.

The Revised Curriculum shall be effective, from the Academic Session 2020-21 onwards, for Post Graduate Degree Course in the Constituent College of the University viz. Shri B. M. Patil Medical College, Hospital and Research Centre, Vijayapura.

REGISTRAR

REGISTRAR
BLDE (Deemed to be University)
Vijayapura-586103. Karnataka.

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

Copy to:
- The Secretary, UGC, New Delhi
- The Secretary, MCI
- The Controller of Examinations
- The Vice Principal
- The Vice Principal (Academics)
- The Prof. & HODs Pre, Para and Clinical Departments
- The Co-ordinator, IQAC
- PS to the Hon'ble Chancellor
- PS to the Hon'ble Vice-Chancellor

Our Vision

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

Our Mission

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

Section - I

Goals and General Objectives of Postgraduate Medical Education Program

Goal

The goal of postgraduate medical education shall be to produce a competent specialist and / or a medical teacher as stated in the Post Graduate Medical Education Regulations 2000 and its amendments thereof [May2018]

(i) Who shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy.

(ii) Who shall have mastered most of the competencies, pertaining to the specialty, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system.

(iii) Who shall be aware of the contemporary advances and developments in the discipline concerned.

(iv) Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology, and

(v) Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

General Objectives

At the end of the postgraduate training in the discipline concerned the student shall be able to:

(i) Recognize the importance of the concerned specialty in the context of the health need of the community and the national priorities in the health sector.

(ii) Practice the specialty concerned ethically and in step with the principles of primary health care.

(iii) Demonstrate sufficient understanding of the basic sciences relevant to the concerned specialty.

(iv) Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and promotive measures/strategies.

(v) Diagnose and manage majority of the conditions in the specialty concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.

(vi) Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the specialty.

(vii) Demonstrate skills in documentation of individual case details as well as morbidity and mortality data relevant to the assigned situation.

(viii) Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behavior in accordance with the societal norms and expectations.

(ix) Play the assigned role in the implementation of national health programs, effectively and responsibly.
(x) Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
(xi) Develop skills as a self-directed learner; recognize continuing educational needs, select and use appropriate learning resources.
(xii) Demonstrate competence in basic concept of research methodology and epidemiology, and be able to critically analyse relevant published research literature.
(xiii) Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
(xiv) Function as an effective leader of a team engaged in health care, research or training.

Statement of the Competencies

Keeping in view the general objectives of postgraduate training, each discipline shall aim at development of specific competencies, which shall be defined and spelt out in clear terms. Each department shall produce a statement and bring it to the notice of the trainees in the beginning of the program so that he or she can direct the efforts towards the attainment of these competencies.

Components of the PG Curriculum

The major components of the PG curriculum shall be:

- Theoretical knowledge
- Practical/clinical Skills
- Training in writing thesis/research articles
- Attitudes, including communication.
- Training in research methodology, medical ethics & medicolegal aspects
- Teaching skills to the undergraduates, juniors and support teams

Source: Medical Council of India, Regulations on Postgraduate Medical Education, 2000. [amended upto May 2018]

Eligibility for Admission:

1. Post graduate degree course:

   The candidate seeking admission should have passed MBBS from a college recognized by Medical Council of India.

As per requisites of statutory bodies & as laid out in Post graduate regulations of MCI & its amendments thereof, the minimum percentage of marks obtained in the entrance test

conducted by competent authority shall be as per MCI regulations & its amendments as applicable time to time.

Eligibility for Foreign / PIO / NRI students will be based on qualifying examination marks and MCI amendments as applicable at the time of selection and admission process.

Candidates seeking admission to superspeciality [M.Ch]
The candidate seeking admission to superspeciality course should have passed MS/MD in concerned subjects (As per MCI regulations & its amendments thereof) or passed DNB in concerned broad specialities & should fulfill requirements of MCI regulations.

2. As per requisites of statutory bodies & as laid out in Post graduate regulations of MCI & its amendments thereof, the minimum percentage of marks obtained in the entrance test conducted by competent authority shall be as per MCI regulations & its amendments as applicable time to time.

   Eligibility for Foreign / PIO / NRI students will be based on qualifying examination marks and MCI amendments as applicable at the time of selection and admission process.

The MCI norms to qualify for Admissions

Candidates seeking admission to these Post Graduate Degree courses should have passed M.B.B.S. recognized by Medical Council of India or equivalent qualification and should have obtained permanent Registration from the Medical Council of India or any of the State/ Medical council or candidate should register the same within one month from the date of admission, failing which the admission of the candidate shall be cancelled. Provided that in the case of a foreign national, the MCI may on the payment of prescribed fee for the registration, grant temporary registration for the duration of post graduate training restricted to the medical college/ institute to which the applicant is admitted for the time being exclusively for post graduate studies; provided further, that temporary registration to such foreign national shall be subjected to the condition that such person is duly registered with appropriate registering authority in his /her country wherefrom he has obtained his basic medical qualification ,and is duly recognized by the corresponding Medical Council or concerned authority.

If the candidate fails to fulfill the relevant eligibility requirements as mentioned above he/she will not be considered eligible for admission for Medical Postgraduate Degree Courses even if he/she is placed in the merit list of statutory authority and BLDE (Deemed to be University).

Obtaining Eligibility Certificate by the University before making Admission

Candidate shall not be admitted for any postgraduate degree course unless he/she has obtained and produced the eligibility certificate used by the University. The candidate has to make an application to the University with the following documents along with the prescribed fee:

1. MBBS pass/degree certificate issued by the University.
2. Marks cards of all the university examinations passed MBBS course.
3. Attempt Certificate issued by the Principal
4. Certificate regarding the recognition of the Medical College by the Medical Council of India.
5. Completion of internship certificate.
6. In case internship was done in a non-teaching hospital, a certificate from the Medical Council of India that the hospital has been recognized for internship.
7. Registration by any State Medical council and
8. Proof of SC/ST or OBC or physically handicapped status, as the case may be.

In addition to the above mentioned documents, candidate applying for admission to superspeciality courses has to produce degree/pass certificate of MD/MS/DNB degree with prescribed fee.

Intake of Students

The intake of students to each course shall be in accordance with the ordinance in this behalf.

Course Duration

a. M.D. / M.S. Degree Courses:
The course of study shall be for a period of 3 completed years including examinations. (MCI PG REG 2000 10:1)

b. D.M/M Ch Degree Courses; (MCI PG REG 2000, 10:2)
The duration of these courses shall be for a period of 3 completed years including examinations.

Training Method

The postgraduate training for degree shall be of residency pattern. The post graduate shall be trained with graded responsibilities in the management and treatment of patients entrusted to his/her care. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions grand rounds, case

demonstration, clinics, journal review meetings, CPC and clinical meetings. Every candidate should be required to participate in the teaching and training program of undergraduate students. Training should include involvement in laboratory and experimental work, and research studies. Basic medical sciences students should be posted to allied and relevant clinical departments or institutions. Exposure to applied aspects of their learning should be addressed. Similarly, clinical subjects' students should be posted to basic medical sciences and allied specialty departments or institutions.

Training of superspeciality [M.Ch] should follow similar pattern. In addition, they have to be trained in advanced techniques of diagnosis and treatment pertaining to their specialty, participate actively in surgical operations as well.

Attendance, Progress and Conduct

A candidate pursuing degree course should work in the concerned department of the institution for the full period as a full time student. No candidate is permitted to run a clinic/laboratory/nursing home while studying postgraduate course

Each year shall be taken as a unit for the purpose of calculating attendance. Every student shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation, clinics and lectures during each year as prescribed by the department and not absent himself / herself from work without valid reasons. Every Candidate is required to attend a minimum of 80% of the training during each academic year of the post graduate course. This shall include assignments, assessment of full time responsibilities and participation in all facets of educational process. Provided further, leave of any kind shall not be counted as part of academic term without prejudice to minimum 80% attendance of training period every year. Leave benefits shall be as per university rules.

A post graduate student pursuing degree course in broad specialties, MD, MS and superspeciality courses DM, M.Ch would be required to present one poster presentation, read one paper in national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him/her to be eligible to appear at the university degree examinations. (MCI, PG 2000, 13.9)

Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the University Examinations.

Monitoring Progress of Studies

The learning process of students should be monitored through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment done by using checklists that assess various aspects.

The learning out comes to be assessed include:

- Personal Attitudes,
- Acquisition of Knowledge,
- Clinical and operative skills, skills of performing necessary tests/experiments
- Teaching skills.
- Documentation skills

Personal Attitudes:

The essential items are:

- Caring attitude, empathy
- Initiative in work and accepting responsibilities
- Organizational ability
- Potential to cope with stressful situations and undertake graded responsibility
- Trust worthiness and reliability
- To understand and communicate intelligibly with patients and others
- To behave in a manner which establishes professional relationships with patients and colleagues
- Ability to work in team
- A critical enquiring approach to the acquisition of knowledge

The Methods used mainly consist of observation. Any appropriate methods can be used to assess these. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers. However every attempt should be made to minimize subjectivity.

Acquisition of Knowledge:

Lectures: Lectures/theory classes as necessary may be conducted. It is preferable to have one class per week if possible. They may, be employed for teaching certain topics. Lectures may be didactic or integrated.

The following selected common topics for post graduate students of all specialties to be covered are suggested here. These topics can be addressed in general with appropriate teaching-learning methods centrally or at departmental level.

- History of medicine with special reference to ancient Indian medicine
- Basics of health economics and health insurance
- Medical sociology, Doctor –Patient relationship, role of family in disease
- Professionalism & Medical code of Conduct and Medical Ethics
- Research Methods, Bio-statistics
- Use of library, literature search ,use of various software and databases

- Responsible conduct of research
- How to write an article, publication ethics and Plagiarism
- Journal review and evidence based medicine
- Use of computers &Appropriate use of AV aids
- Rational drug therapy
- National Health and Disease Control Programmes
- Roles of specialist in system based practice
- Communication skills.
- Bio medical waste management
- Patient safety, medical errors and health hazards
- Patient's rights for health information and patient charter.

These topics may preferably taken up in the first few weeks of the 1st year commonly for all new postgraduates and later in 2nd year or 3rd year as required during their progression of the programme. The specialty wise topics can be planned and conducted at departmental level.

a) Integrated teaching: These are recommended to be taken by multidisciplinary teams for selected topics, eg. Jaundice, Diabetes mellitus, thyroid diseases etc. They should be planned well in advance and conducted.

Journal Review Meeting (Journal club):

The ability to do literature search, in depth study, presentation skills, use of audio – visual aids, understanding and applying evidence based medicine are to be focused and assessed. The assessment is made by faculty members and peers attending the meeting using a checklist

Seminars / symposia:

The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio – visual aids are to be assessed using a checklist.

Clinico-Pathological conferences:

This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a check list similar to that used for seminar.

Medical Audit: Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

Clinical Skills: Day to Day Work: Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills

Clinical Meetings:

Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list.

Group discussions: Group discussions are one of the means to train and assess the student's ability to analyse the given problem or situation, apply the knowledge and make appropriate decisions. This method can be adopted to train and assess the competency of students in analyzing and applying knowledge.

Death review meetings/Mortality meetings: Death review meetings is important method for reflective learning. A well conducted morbidity and mortality meetings bring about significant reduction in complications, improve patient care and hospital services. They also address system related issues. Monthly meetings should be conducted with active participation of faculty and students. Combined death review meetings may be required wherever necessary.

Clinical and Procedural Skills:

The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book.

Teaching Skills:

Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students

Attitude and Communication skills:

Candidates should be trained in proper communication skills towards interaction and communication with patients, attendees and society in general. There should be appropriate training in obtaining proper written informed consent, discussion and documentation of the proceedings. Structured training in various areas like consent, briefing regarding progress and breaking bad news are essential in developing competencies.

Variety of teaching –learning methods like Role play, video based training, standardized patient scenarios, reflective learning and assisting the team leader in all these areas will improve the skills. Assessment can be done using OSCE simulated scenarios and narratives or any appropriate means. Training to work as team member, lead the team whenever situation demands is essential. Mock drills to train and assess the readiness are very helpful.

Work diary / Log Book:

Every candidate shall maintain a Work Diary/Log Book and record his/her participation in the training programs conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, conducted by the candidate. A well written and validated Log Book reflects the competencies attained by the learner and points to the gap which needs address. This Log Book shall be scrutinized by concerned teachers periodically and certified, by the Head of Department and Head of the Institution, and presented during University Practical / Clinical examination.

Periodic tests:

In case of degree courses of three years duration (MD/MS, DM, M.Ch), the concerned departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practical / clinical and viva voce.
One of these practical/clinical tests should be conducted by OSPE (objective structured practical examination or OSCE (objective structured clinical examination) method.
Records and marks obtained in such tests will be maintained by the Head of Department and sent to the University, when called for,

Assessment

Assessment should be comprehensive & objective. It should address the stated competencies of the course. The assessment needs to be spread over the duration of the course.

FORMATIVE ASSESSMENT, ie., assessment during the training would include:
Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self directed learning and ability to practice in the system.

General Principles
Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning: it should also cover professionalism and communication skills. The Internal Assessment should be conducted in theory and clinical examination.

Quarterly assessment during the Postgraduate training course should be based on following educational activities:

1. Journal based/recent advances learning
2. Patient based/Laboratory or Skill based learning
3. Self directed learning and teaching
4. Departmental and interdepartmental learning activity
5. External and outreach Activities/CMEs

Records: Records and marks obtained in tests will be maintained by the Head of the Departments and will be made available to the University or MCI.

Procedure for defaulter:

Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

Dissertation: Every candidate pursuing MD/MS degree course is required to carry out work on a selected research project under the guidance of a recognized post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.

The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem, formulation of hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis and comparison of results and drawing conclusions.

Every candidate shall submit to the Registrar (Academic) of the University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within six months from the date of commencement of the course on or before the dates notified by the University. The synopsis shall be sent through the proper channel.

Such synopsis will be reviewed and the dissertation topic will be registered by the University. No change in the dissertation topic or guide shall be made without prior approval of the University.

The dissertation shall be written under the following headings:

1. Introduction
2. Aims or Objectives of study
3. Review of Literature
4. Material and Methods
5. Results

6. Discussion
7. Conclusion
8. Summary
9. References
10. Tables
11. Annexure

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.

Adequate number of copies as per norms and a soft copy of dissertation thus prepared shall be submitted to the Controller of Examinations six months before final examination on or before the dates notified by the University.

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

Guide:

The academic qualification and teaching experience required for recognition by this University as a guide for dissertation work is as per Medical Council of India Minimum Qualifications for Teachers in Medical Institutions Regulations, 1998 and its amendments thereof. Teachers in a medical college/institution having a total of eight years teaching experience out of which at least five years teaching experience as Lecturer or Assistant Professor gained after obtaining post graduate degree shall be recognized as post graduate teachers.

A Co-guide may be included provided the work requires substantial contribution from a sister department or from another medical institution recognized for teaching/training by this University / Medical Council of India. The co-guide shall be a recognized post graduate teacher of BLDE (Deemed to be University).

Change of guide:

In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the University.

Schedule of Examination:

The examination for M.D. /M.S and DM/M.Ch courses shall be held at the end of three academic years. The university shall conduct two examinations in a year at an interval of four to six months between the two examinations. Not more than two examinations shall be conducted in an academic year.

Scheme of Examination

M.D. /M.S. Degree

M.D. / M.S. Degree examinations in any subject shall consist of dissertation, written papers (Theory), Practical/Clinical and Viva Voce.

Dissertation:

Every candidate shall carryout work and submit a Dissertation as indicated above. Acceptance of dissertation shall be a precondition for the candidate to appear for the final examination.

Written Examination (Theory):

Written examination shall consist of **four** question papers, each of **three** hours duration. Each paper shall carry 100 marks. Out of the **four** papers, the 1st paper in clinical subjects will be on applied aspects of basic medical sciences and 4th paper on Recent advances, which may be asked in any or all the papers. In basic medical subjects and para-clinical -subjects, questions on applied clinical aspects should also be asked.

Practical / Clinical Examination:

In case of practical examination, it should be aimed at assessing competence and skills of techniques and procedures as well as testing students ability to make relevant and valid observations, interpretations and inference of laboratory or experimental work relating to his/her subject.

In case of clinical examination, it should aim at examining clinical skills and competence of candidates for undertaking independent work as a specialist. Each candidate should examine at least one long case and two short cases minimum. However additional assessment methods can be adopted which will test the necessary competencies reasonably well.

The total marks for Practical / Clinical examination shall be 300.

Viva Voce:

Examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills.

The total marks shall be 100:

- 80 Marks, for examination of all components of syllabus
- 20 Marks for Pedagogy

Examiners:

There shall be at least four examiners in each subject. Out of them two shall be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the Medical Council of India.

Criteria for pass & distinction: Criteria for declaring as pass in University Examination: A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical/clinical and (3) viva voce examination. The candidate should pass independently in practical/clinical examination and Viva Voce: vide MCI pg 2000 Reg no 14(4) (Ciii)

Obtaining a minimum of 40% marks in each theory paper and not less than 50% cumulatively in all the four papers for degree examinations. Obtaining of 50% marks in Practical examination shall be mandatory for passing the examination as a whole in the said degree examination as the case may be.[amendment of MCI PG Regulations clause 14 dated 5.4.2018]

A candidate securing less than 50% of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Controller of Examinations.

Declaration of distinction: A successful candidate passing the University examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate of marks is 75 percent and above.
Distinction will not be awarded for candidates passing the examination in more than one attempt.

D.M/M.Ch Degree

DM/M.Ch Degree examinations in any subject shall consist of written theory papers (theory), practical/clinical and Viva voce.

Written Examination (Theory):

Written examination shall consist of **four** question papers, each of **three** hours duration. Each paper shall carry 100 marks. Out of the **four** papers, the 1st paper in clinical subjects will be on applied aspects of basic medical sciences. Recent advances may be asked in any or all the papers. In basic medical subjects and para-clinical -subjects, questions on applied clinical aspects should also be asked.

Practical / Clinical Examination:

In case of practical examination, it should be aimed at assessing competence and skills of techniques and procedures as well as testing students ability to make relevant and valid observations, interpretations and inference of laboratory or experimental work relating to his/her subject.

In case of clinical examination, it should aim at examining clinical skills, competence of candidates for undertaking independent work as a specialist. Each candidate should examine at least one long case and two short cases.

The total marks for Practical / clinical examination shall be 300.

Viva Voce:

Examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills.

The total marks shall be 100:

- 80 Marks, for examination of all components of syllabus
- 20 Marks for Pedagogy

Examiners: There shall be at least four examiners in each subject. Out of them two shall be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the Medical Council of India.

Criteria for passing and distinction: Criteria for declaring as pass in University Examination: A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical including clinical and (3) viva voce examination. The candidate should pass independently in practical/clinical examination vide: MCI pg 2000 Reg no 144-c (iii).

Obtaining a minimum of 40% marks in each theory paper and not less than 50% cumulatively in all the four papers for degree examinations. Obtaining of 50% marks in Practical examination shall be mandatory for passing the examination as a whole in the said degree examination as the case may be.[amendment of MCI PG Regulations clause 14 dated 5.4.2018]

Declaration of distinction: A successful candidate passing the University examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate of marks is 75 percent and above.

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Declaration of distinction: A successful candidate passing the University examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate of marks is 75 percent and above.
Distinction will not be awarded for candidates passing the examination in more than one attempt.

Number of candidates per day: The maximum number of candidates for practical / clinical and viva-voce examination shall be as under:

MD / MS Courses: Maximum of 8 per day
DM/M.Ch Maximum of 3 per day

Additional annexure to be included in all curricula

Postgraduate Students Appraisal Form
Pre/Para/Clinical Disciplines

Name of Department/Unit :
Name of the PG Student :
Period of Training : FROM…… TO……..

Sr. No	PARTICULARS	Not Satisfactory	Satisfactory	More Than Satisfactory	Remarks
		1 2 3	4 5 6	7 8 9	
1	Journal based/recent advances learning				
2	Patient based /Laboratory or Skill based learning				
3	Self directed learning and teaching				
4	Departmental and interdepartmental learning activity				
5	External and Outreach Activities/CMEs				
6	Thesis/Research work				
7	Log Book Maintenance				

Publications Yes/No

Remarks* ……..
…….
…….
……

*Remarks: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE SIGNATURE OF GUIDE

SIGNATURE OF HOD SIGNATURE OF UNIT CHIEF

SECTION - II

MD. PHYSIOLOGY

Goals:

The Postgraduate course in M.D. Physiology should enable a medical graduate to be:

i. A competent Physiologist, who would provide high quality health care and advance the cause of science through research and training .
ii. A good medical teacher in Physiology, Practicing the required skills of teaching and able to render appropriate advice/service to clinicians as and when required.

Learning Objectives:

At the end of training course, a Post graduate student should have thorough knowledge of body with respect to .

1. Cognitive domain :

a. All systems of body should be studied with respect to : Historical aspect, Evolution and development, Comparative Physiology, Structure - Gross and Electron microscopic and function at cellular level, Quantitative and Qualitative aspects, Regulatory mechanisms, Variations in Physiological and pathological conditions, Applied physiology and Recent advances.
b. Able to teach the basic physiological mechanisms of human body with reference to their implications in the pathogenesis of diseases (pathophysiology) and their management to undergraduate medical and paramedical students.
c. Conduct such clinical and experimental research, as would have a significant bearing on human health and patient care.
d. Interact with other departments by rendering services in advanced laboratory investigations and relevant expert opinion.
e. Participate actively in various workshops/seminars/journal clubs/demonstration in the allied departments, to acquire various skills for collaborative research.
f. Contribute to society by imparting physiological understanding of health problems.
g. Plan a research study and conduct basic and clinical systemic investigations. 1. Psychomotor domain :
h. PG students should be able.
i. a. To perform human experiments, Hematology experiments based on biophysical principles and interpret observations of Animal (Mammalian and Amphibian) experiments.

j. b. To acquire history taking and clinical examination skills.

2.Affective domain :

k. a. A Post graduate student should develop communication skills to interact with students, Colleagues, Superiors and others staff members.

l. b. He / She should be able to work as a member of a team to carry out teaching as well as research activities.

m. c. He /She should have right attitude (Medical ethics) towards teaching profession.

n. d. Communicate effectively with peers, students and teachers in various Demonstrate self-awareness and personal development in routine conduct. (Self-awareness)

o. e. Concepts of Physiological norms range and variations, Transport across Cell teaching-learning activities. (Communication)

p. f. Demonstrate

q. 1. Due respect in handling human body parts & cadavers during dissection (Ethics & Professionalism)

r. 2. Humane touch while demonstrating living surface marking in subject/patient (Ethics & Professionalism)

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

t. h. Appreciate the issues of equity and social accountability while exposing students to early clinical exposure (Equity and social accountability)

Outline of course content

Theory

1) **General Physiology Including Biophysics** : Compartments and Measurements, Hypoproteinemia. Homeostasismembrane, relationship between stimulus and response. Structure of cell membrane, RMP, Cellular receptors, Intercellular communications. Body Fluids Compartments and changes in Body Fluid. Biological membranes with details of membrane receptors, Physiology of growth and aging and Principles and applications of genetics.
2) **Blood :** Blood composition ; cellular elements of blood their formation and regulation. Hemoglobin : Synthesis and functions Jaundice, Anemia & their Classification, Hemostatic mechanisms, Anticoagulants, Blood groups, Rh- incompatibility Blood transfusion, ESR, Basic Mechanisms of Immunity & Function of WBCs, Lymph : Composition Circulation and functions.
   Plasmin system and Tissue typing.

3) **Alimentary System :** Functional Morphology Smooth Muscle : Structure Mechanism of Contraction. Nerve supply and Nerve transmitters. Composition Function and regulation of secretion of Salivary glands, Stomach, Small Intestine and large Intestine.
   Regulation of gastrointestinal Movements, Functions of Gall bladder, liver. Site of production and action of GI Hormones. Mechanism of Absorption of food.
   Physiological basis of Peptic ulcer, Diarrhoea and Constipation. Motility disorders : Achalasia, Hirschsprung disease. Gastro intestinal hormones and Absorption of nutrients, Relationship of diet and diseases, Starvation and obesity.

4) **Nerve Muscle Physiology** : Classification of Nerves and Muscle, Structure of skeletal muscle. Types of muscle fibers. Mechanism of contraction and Its molecular basis.
   Thermal and chemical changes during muscle contraction. Oxygen debt. Neuromuscular Transmission. Neuromuscular blocking drugs. Pathophysiology of muscle disorders.
   Pathophysiology of Myasthenia Gravis.
   Experimental techniques to study bioelectrical phenomena (Voltage clamp technique, cathode ray oscilloscope, S.D. curve, nerve conduction studies), EMG,

5) **Cardio Vascular System** : Functional anatomy of heart, properties of cardiac muscle Principles of Electro cardiography, Electrical and Mechanical changes in cardiac cycle, Conducting system of Heart Normal ECG, Cardiac output : Measurement in Man, Physiological Variations. Regulatory mechanisms of Heart rate and Blood pressure. Regional Circulations Normal values, Physical Principles governing flow of blood in Heart and blood vessels, Measurement and regulation of coronary blood flow, changes in CVS during muscular exercise, Postural changes, Hypovolemia, Hypoxia, and cardio pulmonary resuscitation. Microcirculation. Hemodynamics, Pathophysiology of Hypertension, Shock, Cardiac Failure and Coronary Artery Disease.
   Echocardiography and vector cardiogrphy, ECG, Stress test , CT scan, Cardiac catheterization , Flow meters and Ultrasonograhpy .

6) **Respiratory System** : Functional anatomy of Respiratory systems, Mechanics of Normal respiration, Physical Principles of governing flow of air in respiratory passages, Lung Compliance, Alveolar ventilation, ventilation perfusion Ratio, Oxygen and (O2) transport, Diffusing capacity, pulmonary function Tests. Regulation of respiration, Respiratory acidosis and alkalosis, Pulmonary blood flow, Hypoxia, Cyanosis, Asphyxia, Respiratory adjustments during muscle exercise, Hyperbaric conditions, Principles of Oxygen therapy, Artificial respiration, Cardiopulmonary resuscitation Hyaline Membrane disease, Pathophysiology of Restrictive and obstructive lung diseases, Pulmonary edema and Dyspnoea. Lung function tests, Blood gas analysis.
7) **Renal Physiology** : Functions of different parts of Nephron urine formation. Role of Kidney in water and Electrolyte balance. Acidification of urine. Diuresis, Kidney

function tests. Juxtaglomerular apparatus. Renin - Angiotensin system, Renal blood flow. Structure and its and measurement regulation. Innervation of bladder, Micturition, Cystometrogram, Disorders of Micturition and Principles of Artificial kidney and Dialysis.

8) **Central Nervous System :** Organization of Central Nervous system Functions and Neuronal organization at spinal cord level, synaptic transmission, motor and sensory systems and their lesions, Reticular system in brain stem, sleep, wakefulness, EEG waves and Physiological changes in EEG, clinical lesions and Experimental sections at spinal cord, brain stem and sub cortial levels, Physiology of Basal Ganglia, Cerebellum, Thalamus, Hypothalamus limbic system, Pre frontal lobe and cerebral cortex, speech and its disorders, Autonomic Nervous system, Formation, circulation and functions of CSF,Blood Brain Barrier, Central Neuro transmitters. Cerebral blood flow and its measurements. Neuroglia, Methods to study the functions with diagnostic techniques and Physiological basis of features of diseases of Cerebellum, Basal Ganglia, Thalamus, Cerebral Cortex, Reticular formation, Hypothalamus, ANS and Limbic system, CT Scan and MRI Techniques.
9) **Endocrine System** : General Principles of Regulation of Endocrine glands. Hormones functions, cellular mechanism of hormone action., regulation of secretion.

   Experimental and clinical disorders of Anterior and Posterior Pituitary, Thyroid, Parathyroid, Adrenal Cortex and Medulla and Endocrine Pancreas. Stress and Hormones. Minor Endocrine glands : Pineal Body, Heart and Kidney. Radio immuno assay.

10) **Reproductive system** : Sex determination and differentiation Male Reproduction ; Functions of Testes, Constituents of Semen, Testicular hormones, Spermatogenesis and regulation.Female Reproduction : Menstrual Cycle : Changes in ovary, uterus, Cervix, vagina and hormonal regulation. Ovulation and Its detection. Fertilization, Implantation, Physiological changes during pregnancy Fetoplacental Unit, Nutritional needs of mother during pregnancy, Parturition, Lactation, composition of breast milk, Placental and Fetal Circulation Menopause, Physiology of Newborn, Family planning & welfare, Physiological basis of Contraception, safe period rhythm and other methods of contraception. Invitro fertilization,

11) **Special Senses :** Eye : Functional anatomy of Eye, image formation on Retina, Structure of photoreceptors, Electrical activity of photoreceptors, Errors of Refraction, Functions of Aqueous humour, Intraocular tension. Mechanisms of Accommodation Dark adaptation, pupillary reflexes functions of Retina optic pathway and lesions. Role of visual cortex in perception. Field of vision. Colour vision, Acuity of vision,

Photochemistry of vision, Electrophysiology of Retina and Nutritional deficiency blindness, Auditory Apparatus : Functional anatomy of Ear, Physics of sound , Role of Tympanic Membrane, Middle ear and cochlea in hearing , Auditory Receptors and Pathway, Electrophysiology of cochlea, Deafness and its causes, Principles of Audiometry, Tuning fork tests & Interpretation.Vestibular apparatus : Structure and Functions, Connections and lesions of vestibular apparatus. Taste and Smell : Modalities, Receptors, pathway, Cortical and limbic areas associated with taste and smell.

12) **Environmental Physiology :** Physiology of deep sea diving, Space physiology, High altitude Physiology, Hyperbaric oxygen therapy, Structure and functions of skin, temperature regulation, Hypothermia and Hyperthermia, Air and Noise Pollution and Radiation Physiology.

13) **Exercise Physiology** : Concept of physical fitness , Its components and evaluation, Adaptations

14) **Stress Relaxation Technique** : Principles of Yoga, Breathing exercise, Meditation and Bio feedback techniques.

15) Comparative Physiology of all systems

16) Medical Education-Ethics, communication skill and Biostatistics

17) Laboratory animal ethics – Guidelines for care and use of animals in scientific research. Breeding of and Experiments on animals (control and Supervision) rules, 1998 under prevention of cruelty to animals Act 1960.

18) Biomedical waste management and Recent Advances in all systems

Practical Training

A. Animal Experiments (<u>For demonstration only and not for University Examinations</u>)
Amphibian experiments

1. Freeload and After Load
2. Effect of continuous repeated stimulation (study of phenomena of fatigue)
3. Length tension diagram.
4. Properties of Cardiac Muscle: Long refractory period, All or None Law.

5. Extrasystole and Compensatory Pause, Beneficial effect
6. Regulation of Heart, Vagus dissection and effect of vagal stimulation.
7. Actions of acetylcholine, Adrenaline and Nicotine on Heart (Langley's)
8. Perfusion of isolated frogs heart – Role of Na+, K+, Ca+
9. Decerebrate and Spinal frog.

Mammalian

1. Rat/guinea pig ileum : Intestinal movement recording
2. Rabbit heart: Langend preparation
3. General Management of Mammalian experiments.
4. Recording blood pressure and respiration on dog and also the effects of various factors.
5. Recording the effect of stimulation of Vagus nerve on blood pressure and respiration on dog
6. Stimulation of central and distal end of the vagus on arterial pressure after vagotomy
7. Effect of drug – Adrenaline and Acetylcholine on blood pressure and respiration on dog.
8. Adrenal extract on intestinal movement and tone.
9. Effect of Occlusion of the Carotid arteries on blood pressure and respiration.
10. Stimulation of Splanchnic nerve (distal end) on arterial pressure.

B. Human Physiology

1. Clinical Physiology

i. Elementary principles of clinical examination
ii. Methods of Inspection/palpation/percussion/auscultation
iii. Plan of conduction and scheme of recording
iv. General and physical examination

2. Cardiovascular system

i. Clinical examination of circulatory system, Electrocardiography –
ii. ECG & its interpretation.
iii. Examination of the arterial pulses, blood vessels and measurements of Blood pressure in different posture and exercises, measurement of JVP.

3. Respiratory system

i. Clinical examination of respiratory system
ii. Basic life support

4. Gastro-intestinal system

i. Clinical examination of abdomen.
ii. Fractional test meal, Liver function tests
iii. Renal function tests(Urea clearance test)

5. Central Nervous System

i. Clinical examination of the central nervous system and autonomic nervous system and its physiological basis.

ii. Examination of higher mental functions.
iii. Clinical examination of the special senses. Outline of the examination of cranial nerves.
iv. Tests of hearing and deafness
v. Motor functions
vi. Reflex functions
vii. Sensory function

6. Ophthalmology
i. Clinical examination of the eye and papillary reflex
ii. Visual acuity
iii. Perimetry
iv. Accommodation
v. Colour vision and colour blindness
vi. Fundoscopy

C. Laboratory Procedures (Normal human subjects)

1. Haematology:
i. Haemocytometry
ii. Determination of Reticulocyte count, Platelet count, WBC count, RBC count and absolute eosinophil count in normal and diseased states.
iii. Differential count of WBC
iv. Haemoglobinometry, spectroscopy
v. Blood grouping and cross matching
vi. Blood transfusion techniques
vii. Hemostatic tests
viii. Determination of bleeding time, clotting time
ix. Haemolysis & Fragility test
x. Examination of normal bone marrow aspiration smear

2. Respiratory System:
i. Mechanical spirometry
ii. Recording of lung function tests by computerized or electronic spirometer
iii. Breath holding and endurance tests
iv. Blood gas analysis
v. Stethography
vi. Resuscitation and artificial respiration.

3. Reproductive System:
i. Methods to determine ovulation time –
a. Basal Body temperature chart,
b. Cervical smear
c. Vaginal smear
ii. Pregnancy diagnostic test – Immunogical test
iii. Sperm count

4. Gastro Intestinal System:
i. Endoscopy

5. Nerve Muscle Physiology

i. Ergography
ii. Recording of EMG – Nerve conduction, both sensory and motor

7. Others:

i. Construction of Dietary chart for –
   1. Growing Children
   2. Hypertensive patients
   3. CAD
   4. Diabetes mellitus patients

ii. Tests for physical fitness –
   1) Field 2 km. walk
   2) Lab Harvard step test
   3) Bicycle ergometry
   4) Treadmill protocols leading to determination of vo2 max.
   5) Cardio respiratory response to whole body exercise.

D. Clinical Biochemistry:

i. Examination of normal and abnormal constituents of urine
ii. Other kidney function tests
iii. Estimation of blood sugar
iv. Liver function tests
v. Glucose tolerance test

Time Schedule and Rotation postings

During the second year of the course, postings may be made to attend other clinical and para clinical subjects in co-ordination with concerned departments, only in the forenoon sessions as follows:

1. Clinical Biochemistry – 10 days.
   To understand the principles of clinical biochemical tests and interpretation of data.
   - Liver function tests.
   - Renal function tests.
2. Department of Anatomy – 10 days
   (Histology Laboratory) Staining techniques, moulding of specimens, slide identification characteristics.
3. Biostatics and Research Methodology – 03days
   To attend workshop on research methodology .
4. Aerospace Medicine and Applied Physiology – 7dyas.
   - Applied Cardio-Respiratory Physiology
   - Thermal Physiology

- Space Physiology
- High altitude physiology and Hyperbaric medicine
- Acceleration Physiology
- Hands-on training in spirometry, orthostatic stress test and evaluation of heat stress and heat strain.

5. Radiology – 10days .
   - Interpretation of: X-Ray and contrast study, fluoroscopic study, ultra sound study of abdomen and myelography
6. Pathology – 10days.

   Pathophysiology and Histopathology of various non communicable diseases.

7. General Medicine – 15days.
   - Clinical examination of patients
   - Investigative procedures
   - Drawing of blood and storage
   - Lumbar puncture, bone marrow and liver biopsies.
   - Interpretation of: X-Ray, ECG, Biopsy report, Biochemical results.
   - Endocrinology Posting: Clinical Examination of patient, Radio Immuno Assay techniques.
   - Ophthalmology : for fundoscopy and measurement of Intraocular pressure, Refractometry & Perimetry.

     At the end of each posting, a certificate has to be obtained from the concerned Head of the Department about satisfactory learning or otherwise.

E. <u>Year wise P.G activities</u>

<u>First year of the course</u> :

The P.G. student is required to

a. To attend all UG Teaching sessions (Lectures, Tutorials and Practicals).
b. To participate in seminars and journal club activities.
c. To select and submit the topic of dissertation.
d. To attend research methodology workshops
e. To attend teaching technology workshops
f. To attend presentation skill workshops
g. To do reference work.
h. To do self study.

<u>Second year of the course :</u>

P.G. graduate student is required to

a. To do work of dissertation.
b. To do UG Teaching.
c. To participate in activities like seminars, journal club, symposia, workshops and group discussions.
d. To start writing the laboratory manuals.
e. To attend rotation postings in other departments .
f. To attend state and national level conferences.
g. To do self study.

Third year of the course :

The P.G. student is required to

a. To complete and submit dissertation 6months before commencement of University examinations.
b. To complete the writing of laboratory manuals.
c. To do UG teaching.
d. To participate in activities like seminars, journal club, symposia, workshop , panel discussion and group discussion.
e. To attend conference at State and National level.
f. To present a paper basing on his/her dissertation work in Institutional Scientific Research Society as well as at least one State / National conference before appearing for the examinations.
g. To publish at least one Research paper or send it for publication in an indexed journal before University examinations.
h. To do self study.
i.

Seminars & Journal reviews.

The postgraduate students should actively participate in departmental seminars and journal clubs. A record showing the involvement of the student shall be maintained. A diary should be maintained. Seminars and journal clubs are suggested to be conducted alternately once in every 15 days.

During three years of the course, Postgraduate students shall participate in teaching undergraduate students in practicals, tutorials and group discussions.

Registration of dissertation topic :

Every candidate shall submit a synopsis in the prescribed proforma for registration of dissertation topic by the University after it is scrutinized by the PG training cum Research Committee of the institution. The synopsis shall be sent within the first 6 months from the

commencement of the course or as notified by the University in the calendar of events, to the Registrar (Academic).

Dissertation Work

During the course of study every candidate has to prepare a dissertation individually on a selected topic under the direct guidance and supervision of a recognized postgraduate teacher as per MCI and university regulations.

Submission of dissertation:

The dissertation shall be submitted to the Controller of Examinations of the University six months prior to the final examination or as notified in the calendar of events. Approval of the dissertation by the panel of examiners is a prerequisite for a candidate to appear for the University examination.

Maintenance of Record of Work Done, Periodical assessment and progress report.

1. A diary showing each day's work has to be maintained by the candidate, which shall be scrutinized by the Head of the Department periodically.
2. A practical record has to be maintained by the candidate and duly scrutinized and certified by the HOD and to be submitted to the external examiner during the final examination.
3. A list of the seminars and journal reviews that have been attended and participated by the student has to be maintained which should be scrutinized by the Head of the Department.

Scheme of Examination

University Examination

A. Theory:

The written examination consists of four papers of 100 marks each. Each paper will be of three hours duration. Questions on recent advances may be asked in any or all papers*.

Paper - I	:	General Physiology, Biopotential, Transport across membrane, Biophysical Principles, Comparative physiology, History of Medicine with special reference to physiology.
Paper – II	:	Systemic Physiology including applied aspects of Blood, Respiratory Physiology, Cardiovascular, Digestive, Excretory systems, Exercise & Sports Physiology & Environmental physiology.
Paper – III	:	Systemic physiology including applied aspects of Central Nervous System, Muscle & Nerve Physiology, Endocrines.

Paper - IV : Systemic physiology including applied aspects of Reproductive System, Special Senses, Yoga & Meditation, Pathophysiology of non communicable diseases and recent advances.

***The topics assigned to the different papers are given as general guidelines. A strict division of subjects may not be possible. Some overlapping of topics is inevitable. Students should be prepared to answer the overlapping topics.**

Each theory paper will consist of: Long Essay type questions - 2 x 20 marks = 40

Short Essay type questions - 6 x 10 marks = 60

B. Practical : 300 Marks

i. Laboratory Procedures

a. Human Normal subjects … 75 marks
b. Identifying Amphibian Graph … 25 marks
c. Solving a problem … 10Marks
d. Haematology … 50 marks
e. Identifying Histology Slides … 35 marks

ii. Clinical Physiology:

Clinical examination of a given subject, discussion on investigations, interpretation of laboratory findings and physiological principles in diagnosis – 75 marks

iii. Clinical Bio-chemistry 30 marks

C. Viva Voce 100 marks

The Viva-Voce would be on all components of syllabus including discussion on dissertation 80 marks

D. Pedagogy 20 marks

Maximum marks for	Theory	Practicals	Viva-Voce	Total
M.D. Physiology Examination	400	300	100	800

Recommended Text, Reference books and Journals

1. Ganong, Review of Medical Physiology,24th edition. Mc Graw hill (serial no changed)
2. Guyton and Hall, Text Book of Medical Physiology, 12th edition. Elseveir
3. Best & Taylor's, Physiological basis of Medical Practice,13th edition. Williams& Wilkins
4. Campbell, Clinical Physiology. ELBS & Blackwell
5. John Bullock, Joseph Boyle, III Michael B. Wang, NMS Physiology 3rd Edn, B.I. Waverley.
6. Sir. John V Dacie S M Lewis, Practical Hematology, Churchill Livingstone
7. Donald Emslie-Smith, Colin R Paterson,Textbook of Physiology, ELBS/Churchill Livingstone
8. Vernon B Mount Castle, Medical Physiology, vol. 1 & vol. 2, CV Mosby Company.
9. Berne & Levy, Physiology, 6th edition. Mosby Year book
10. Carl J Wiggers, Physiology in health and disease, Lea Febiger
11. Williams, Text book of Endocrinology, W.B.Saunders
12. Harrison's Principles of Internal Medicine, 16th edition. Mc Graw hill
13. Harper, Illustrated Biochemistry, 27th edition. McGraw Hill
14. Hand Book of Neurophysiology, , Vol 1,2,3. Williams & Wilkins
15. Wallance O Fem, Hand Book of respiratory Physiology, vol 1. Williams & Wilkins
16. Wintrobe, Clinical Hematology**,** 10th edition. Lea Febiger
17. Kathryn L Mc. Cance Sue E Huether, Text Book of Pathophysiology, Mosby
18. Gyrila Keele & Eric Neil, Samson wright's Applied Physiology, ELBS, Oxford University Press.
19. Understanding Medical Physiology, RL Bijalani, 4th edition. Jaypee
20. Human Physiology, The mechanisms of body functions, Vander, 7th edition. Mc Graw hill

Journals:

1. Journal of Applied Physiology, By American Physiological Society
2. Physiological Reviews, By American Physiological Society
3. Annual Review of Physiology, By American Physiology Society
4. Advances in Physiology Education, By American Physiological Society.
5. Recent advances in Physiology, By American Physiological Society
6. Recent advances in Physiology, By American Physiological
7. Indian Journal of Physiology and Pharmacology.
8. Indian Journal of Medical Research
9. News in Physiological Sciences
10. New England Journal Medicine

11. British Medical Journal
12. Nature
13. Lancet

Integrated Teaching Programme

Sl. N	Name of the Topic	Name of the Subtopic & Dept.	Name of the Subtopic & Dept.	Name of the Subtopic & Dept.	Name of the Subtopic & Dept.	Name of the Subtopic & Dept.
01	Edema	TBW : Definition, Compartments, Measurement & Significance (Phy)	Pathophysiology of Edema (Patho)	Med. Approach to Edema (Medicine)	----	----
02	Anemia	Erythropoiesis & Hemoglobin (Phy)	Pathophysiology of Anemia (Patho)	Investigations in Anemia (Bio)	Medical Managament of Anemia (Med)	Public Health Importance (Comm.Med)
03	Acid base balance	Role of lungs & kidneys (Phy)	Investigations in Acid base disorders (Bio)	Medical Management of Acid base disorders (Med)	Child hood Anemia (Pediatrics)	----
04	Coronary circulation	Anatomy of Coronary Arteries (Anatomy)	Physiology of coronary blood flow (Phy)	Clinical features & Medical Management of CAD (Med)	Surgical Management of CAD (Surg)	----
05	Hypertension	Physiology of blood pressure (Phy)	Pathophysiology of Hypertension (Patho)	Drugs used in Hypertension (Pharmac)	Medical Management of Hypertension (Med)	Non Pharmacological Management of Hypertension (Behavioral Medicine & Yoga)
06	Myasthenia gravis	Physiology of NMJ (Phy)	Pathophysiology of Myasthenia gravis (Patho)	Investigations in Myasthenia gravis (Bio)	Immunity in Myasthenia gravis (Micro)	Medical Management of Myasthenia gravis (Med)

07	Diabetes Mellitus	Insulin (Phy)	Regulation of Blood glucose and investigations (Biochemistry)	1.Pathophysiology of Diabetes of Mellitus (Patho) 2. Oral Hypoglycemic agents & Insulin derivatives (Pharmacology)	Medical Management of Diabetes Mellitus (Med)	Surgical Management of Diabetic foot (Surg)
08	Glaucoma	Anatomy of Eye (Ana)	Aqueous Humor (Phy)	Glaucoma (Ophal)	-----	-----
09	Parkinsonism & Alzeimher Disease	Physiology of basal ganglia & memory (Phy)	Pathophysiology of Parkinsonism & Alzeimher Disease (Patho)	Investigations in Parkinsonism & Alzeimher Disease (Bio)	Medical Management of Parkinsonism & Alzeimher Disease (Med)	-----
10	Peptic Ulcer	Functional Anatomy of Stomach, Gastric Juice Secretion (Phy)	Gastric Function tests (Biochemistry)	Pathophysiology of Peptic Ulcer (Patho)	Medical Management of Peptic Ulcer (Med)	Surgical Management of Peptic Ulcer (Surg)
11	Clinical approach to infertility	Physiology of MC & Spermatogenesis (Phy)	Contraception (Community Medicine)	IVF (OBGy)	-----	-----

SECTION - III

ANNEXURES

MODEL CHECK-LIST FOR EVALUATION OF JOURNAL

REVIEW PRESENTATIONS

Name of the Student: Name of the Faculty/Observer: Date:

Sl. No	Items for observation during presentation	Poor 1	Average 2	Good 3	Excellent 4
1.	Article Chosen was				
2.	Extent of understanding of scope & objectives of the paper by the candidate				
3.	Whether cross references have been consulted				
4.	Whether other relevant publications consulted				
5.	Ability to respond to questions on the paper / subject				
6.	Audio-Visual aids used				
7.	Ability to defend the paper				
8.	Clarity of presentation				
9.	Any other observation				
	Total Score				

Check List – II

MODEL CHECK-LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Student: Name of the Faculty/Observer: Date:

Sl. No.	Items for observation during presentation	Below Average 1	Average 2	Good 3	Very Good 4
1.	Whether other relevant publications consulted				
2.	Whether cross references have been consulted				
3.	Completeness of Preparation				
4.	Clarity of Presentation				
5.	Understanding of subject				
6.	Ability to answer questions				
7.	Time scheduling				
8.	Appropriate use of Audio-visual aids				
9.	Any other observation				
	Total Score				

Check List – III

MODEL CHECK LIST FOR EVALUATION OF DAY TO DAY LEARNING, TEACHING AND RESEARCH ACTIVITIES

(To be completed once a month by Guide and to be counter signed by HOD)

Name of the Student: Name of the Guide : Month :

Sl. No.	Points to be considered	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance				
2.	Punctuality				
3.	Interaction with Teachers, colleagues and supportive staff				
4.	Maintenance of Notes.				
5.	Ability to conduct Theory & Tutorial Classes				
6.	Ability to demonstrate Laboratory Procedure.				
7.	Completeness Preparation for Classes				
8.	Rapport with students.				
9.	Commitment to Research and Departmental Activities.				
10.	Over all quality of day to day work.				
	Total Score				

Signature of Guide Signature of HOD

Check List – IV

EVALUATION FORM FOR PRACTICAL PROCEDURE

Name of the Student: Name of the Faculty : Date:

Sl. No	Points to be considered	Below Average 1	Average 2	Good 3	Very Good 4
1.	Psychomotor skills				
2.	Logical order				
3.	Mentioned all positive and negative points of importance				
4.	Accuracy in performing the procedure.				
5.	Ability to interpret result				
6.	Clinical Correlation.				
7.	Ability to elicit the signs.				
	Total Score				

Check List – V

MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

Sl. No		**Strong Point**	**Weak Point**
1.	Communication of the purpose of the talk		
2.	Evokes audience interest in the subject		
3.	The introduction		
4.	The sequences of ideas		
5.	The use of practical examples and/or illustrations		
6.	Speaking style (enjoyable, monotonous, etc., specify)		
7.	Attempts audience participation		
8.	Summary of the main points at the end		
9.	Asks questions		
10.	Answers questions asked by the audience		
11.	Rapport of speaker with his audience		
12.	Effectiveness of the talk		
13.	Uses AV aids appropriately		

Check List – VI

MODEL CHECK LIST FOR DISSERTATION SYNOPSIS PRESENTATION

Name of the Student: Name of the Faculty: Date:

Sl. No.	Points to be considered divine	Poor	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting a topic					
2.	Appropriate review of literature					
3.	Discussion with guide & Other faculty					
4.	Quality of Protocol					
5.	Preparation of proforma					
	Total Score					

Check List – VII

CONTINOUS EVALUATION OF DISSERTATION WORK BY GUIDE / CO-GUIDE

Name of the Student: Name of the Faculty: Date:

Sl. No.	Items for observation during presentation	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide/co-guide				
2.	Regular collection of case material				
3.	Depth of analysis / discussion				
4.	Departmental presentation of findings				
5.	Quality of final output				
6.	Others				
	Total Score				

LOG BOOK

Table 1: Academic activities attended

Name: Admission year:

College:

Date	Type of Activity Specify Seminar, Journal Club, Presentation, UG teaching	Particulars

LOG BOOK

Table 2: Academic presentations made by the student

Name: Admission Year:

College:

Date	Topic	Type of Presentation Specify Seminar, Journal Club, Presentation, UG teaching Etc.

LOG BOOK

Table 3: Diagnostic and Operative procedures performed

Name: **Academic Year:**

College:

Date	Name	ID No.	Procedure	Category O, A, PA, PI*

* **Key:** O – Washed up and observed

A – Assisted a more senior Surgeon

PA – Performed procedure under the direct supervision of a senior surgeon

PI – Performed independently

Model Overall Assessment Sheet

Name of the Department : **Academic Year :**

Sl. No.	Points to be considered	Name of Student and Mean Score									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
1.	Regularity & Punctuality										
2.	Interaction with colleagues, Teachers & Students.										
3.	Teaching Skills.										
4.	Practical Skills										
5.	Orientation towards research										
Total Score											

Note: Use separate sheet for each year.

SECTION - IV

MEDICAL ETHICS & MEDICAL EDUCATION

Sensitization and Practice

Introduction

There is now a shift from the traditional individual patient, doctor relationship, and medical care. With the advances in science and technology and the needs of patient, their families and the community, there is an increased concern with the health of society. There is a shift to greater accountability to the society. Doctors and health professionals are confronted with many ethical problems. It is, therefore necessary to be prepared to deal with these problems. To accomplish the Goal (i), General Objectives (ii) stated in Chapter II (pages 2.1 to 2.3), and develop human values it is urged that **ethical sensitization** be achieved by lectures or discussion on ethical issues, clinical case discussion of cases with an important ethical component and by including ethical aspects in discussion in all case presentations, bedside rounds and academic postgraduate programs.

Course Contents

1. Introduction to Medical Ethics

   What is Ethics?
   What are values and norms?
   Relationship between being ethical and human fulfillment
   How to form a value system in one's personal and professional life
   Heteronymous Ethics and Autonomous Ethics
   Freedom and personal Responsibility

2. Definition of Medical Ethics
   Difference between medical ethics and bio-ethics
   Major Principles of Medical Ethics 0
   Beneficence = fraternity
   Justice = equality
   Self determination (autonomy) = liberty

3. Perspective of Medical Ethics
   The Hippocratic Oath
   The Declaration of Helsinki
   The WHO Declaration of Geneva
   International code of Medical Ethics (1993)
   Medical Council of India Code of Ethics

4. Ethics of the Individual
   The patient as a person
   The Right to be respected
   Truth and confidentiality
   The autonomy of decision
   The concept of disease, health and healing
   The Right to health
   Ethics of Behavior modification
   The Physician – Patient relationship
   Organ donation

5. The Ethics of Human life
   What is human life?
   Criteria for distinguishing the human and the non-human
   Reasons for respecting human life
   The beginning of human life
   Conception, contraception
   Abortion
   Prenatal sex-determination
   In vitro fertilization (IVF), Artificial Insemination by Husband (AIH)
   Artificial Insemination by Donor (AID)
   Surrogate motherhood, Semen Intra fallopian Transfer (SIFT),
   Gamete Intra fallopian Transfer (GIFT), Zygote Intra fallopian Transfer (ZIFT),
   Genetic Engineering

6. The family and society in Medical Ethics
   The Ethics of human sexuality
   Family Planning perspectives
   Prolongation of life
   Advanced life directives – The Living Will
   Euthanasia
   Cancer and Terminal Care

7. Profession Ethics
   Code of conduct
   Contract and confidentiality
   Charging of fees, Fee-splitting
   Prescription of drugs
   Over-investigating the patient
   Low – Cost drugs, vitamins and tonics
   Allocation of resources in health cares

Malpractice and Negligence

8. Research Ethics
   Animal and experimental research / humanness
   Human experimentation
   Human volunteer research – Informed Consent
   Drug trials\
   ICMR Guidelines for Ethical Conduct of Research – Human and Animal
   ICH / GCP Guidelines
   Schedule Y of the Drugs and Cosmetics Act.

9. Ethical work -up of cases
   Gathering all scientific factors
   Gathering all human factors
   Gathering value factors
   Identifying areas of value – conflict, setting of priorities,
   Working our criteria towards decisions

Recommended Reading

1. Francis C. M., **Medical Ethics**, 2nd Ed, 2004Jaypee Brothers, Bangalore/-
2. Ethical guidelines for biomedical research on human participants, ICMR publication 2017
3. Santosh Kumar: the elements of research, writing and editing 1994, Dept of Urology, JIPMER, Pondicherry
4. Srinivas D.K etal, Medical Education Principles and Practice, 1995, National Teacher Training Centre, JIPMER, Pondicherry
5. Indian National Science Academy, Guidelines for care and use of animals in scientific Research, New Delhi, 1994
6. International committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journals, N Engl G Med 1991
7. Kirkwood B.R, Essentials of Medical Statistics, 1st Ed.,Oxford: Blackwell Scientific Publications 1998
8. Mahajan B.K. Methods in bio statistics for medical students, 5th Ed, New Delhi, Jaypee, Brothers Medical Publishers, 1989
9. Raveendran, B. Gitanjali: A Practical approach to PG dissertation, New Delhi, Jaypee Publications, 1998.
10. John A Dent. Ronald M Harden, A Practical guide for medical teacher, 4th Edition, Churchill Livingstone, 2009.
11. Tejinder Singh Anshu, Principles of Assessment in Medical Education, Jaypee brothers
12. Dr. K.Lakshman, A Hand Book on Patient Safety, RGUHS & Association of Medical Consultants, 2012

13. Bernard Mogs, Communication skills in health & social care, 3rd Edition, (S) SAGE, 2015
14. Manoj Sharma, R. Lingyak Petosa, Measurement and Evalution for Health Educators, Jones & Bartlett Learning.
15. David E. Kern, Particia A, Thomas Mark T, Hughes, Curriculum Development for Medical Education. A six-step approach, The Johns Hopkins University press/Baltimore.
16. Tejinder Singh Piyush Gupta Daljit Singh, Principles of Medical Education (Indian Academy of Paediatrics), 4th Edition, Jaypee Brothers, 2013.
17. Robert Reid, Torri Ortiz Linenemann, Jessica L.Hagaman, Strategy Instruction for Students with learning disabilities, 2nd Edition, The Guilford Press London.
18. Lucinda Becker Pan Demicolo, Teaching in higher education, (S) SAGE, 2013.
19. C.N. Prabhakara, Essential Medical Education (Teachers Training), Mehta publishers.
20. Tejinder Singh Piyush Gupta, Principles of Evaluation & Research for health care programmes, 4th Edition, IAP National Publication House (Jaypee Brothers).
21. R.L.Bijlani, Medical Research, Jaypee Brothers, 2008
22. Stephen Polgar Shane A Thomas, Introduction to Research in the Health Sciences, Churchill Livingstone Elsevier, 2013.
23. Amar A,Sholapurkar. Publish & Flourish -A practical guide for effective scientific writing, Jaypee Brothers, 2011
24. Charles R.K.Hind, Communication Skills in Medicine, BMJ, 1997.