



# BLDE UNIVERSITY

## PG CURRICULUM 2016-17 M. D. Radio-Diagnosis

Published by  
**BLDE UNIVERSITY**

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

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The Constituent College

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

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

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

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



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The Constituent College

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

BLDEU/REG/PG/2016-17/ 505

June 18, 2016

## NOTIFICATION

**Subject: Revised Curriculum for the Post Graduate Degree and Diploma Course-2016**

Reference:

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 meeting of the Academic Council of the University held on April 29, 2016.
3. Minutes of the meeting of the BOM of the University held on June 18, 2016.

The Board of Management of University is pleased to **approve the Curriculum for Post Graduate Degree and Diploma Course at its meeting held on June 18, 2016.**

The revised curriculum shall be effective, from the Academic Session 2016-17 onwards, for Post Graduate Degree and Diploma Course in the Constituent College of the University viz. Shri B. M. Patil Medical College, Hospital and Research Centre, Vijayapura.

REGISTRAR

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**BLDE University, Vijayapura.**

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

Copy to:-

- The Secretary, UGC, New Delhi
- The Controller of Examinations
- Prof. & HODs of Pre, Para and Clinical Departments.
- PS to Hon'ble President
- PS to Hon'ble Vice-Chancellor

Smt. Bangaramma Sajjan Campus, Sholapur Road, Vijayapura - 586103, Karnataka, India.

## **Vision & Mission**

- Excellence in all our endeavours.
- Committed to provide globally competitive quality medical education.
- Provide the best health care facilities in this backward region, in particular, to socially disadvantaged sections of the society.
- Constantly striving to become a Reputed research University with world-class infrastructure, latest tech-tools for teaching/research and adopting global best practices.

## **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 [May2013]

- (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 May2013]

### **Eligibility for Admission:**

Eligibility requirements for Post Graduate Diploma and Degree Courses are: -

1. The candidates seeking admission to these courses should have passed MBBS from the college recognized by Medical Council of India.

Eligibility requirements for Post graduate degree in superspeciality courses, M.Ch./D.M are:

The candidate seeking admission to these courses should have passed MS/MD from the college recognized by Medical Council of India.

2. As per the requisitions of statutory bodies, as laid out in post graduate regulations 2000 of Medical Council of India and its amendments thereof, the minimum percentage of marks in the entrance test conducted by the University for eligibility for admission to Post Graduate courses in broad specialties and super specialties shall be 50 percent for candidates belonging to General category and 40 percent for the candidates belonging to

Scheduled Caste, Scheduled Tribes and Other Backward Classes. Eligibility for persons with locomotor disability of lower limbs category ranging from 30-70% will be 45 percent.

Eligibility for Foreign / PIO / NRI students will be based on qualifying examination marks.

### **The MCI norms to qualify for Admissions**

Candidates seeking admission to these Post Graduate Degree courses should have passed M.B.B.S. recognised 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 and Diploma Courses even if he/she is placed in the merit list of BLDEU-PGET/BLDEU-SUPERSPECIALTY ET.

### **Obtaining Eligibility Certificate by the University before making Admission**

Candidate shall not be admitted for any postgraduate degree/diploma 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 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 years consisting of 6 terms including examinations. For Candidates possessing recognized two year Postgraduate Diploma in the same subject the duration of the course shall be two 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 years including examinations.

c. Diploma Courses:

The course of study shall be for a period of 2 years consisting of 4 terms including examinations (MCI PG REG 2000, 10.3).

### **Training Method**

The postgraduate training for degree/diploma 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 superspecialty 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 [M.Ch] as well.

### **Attendance, Progress and Conduct**

A candidate pursuing degree/diploma 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 specialities, 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.

#### **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.

a) Didactic Lectures: Recommended for selected common topics for post graduate students of all specialties. Few topics are suggested here.

- Bio-statistics
- Use of library,
- Journal review
- Use of computers,
- Appropriate use of AV aids
- Research Methods,
- Search of literature,
- Rational drug therapy
- Medical code of Conduct and Medical Ethics
- National Health and Disease Control Programmes
- Communication skills etc.
- Bio medical waste

These topics may preferably taken up in the first few weeks of the 1<sup>st</sup> year commonly for all new postgraduates. The specialty wise topics can be planned and conducted at departmental level.

b) 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

**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 gaps 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,

In case of diploma courses of two years duration, the concerned departments may conduct two tests, one of them be at the end of first year and the other in the second year 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 or OSCE method.

**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 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 (six academic terms). The examination for the diploma courses shall be held at the end of two academic years (four academic terms).

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 1<sup>st</sup> 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 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 200.

#### **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 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)

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 1<sup>st</sup> 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 200.

#### **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 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).

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.

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.

### **Diploma Examination:**

Diploma examination in any subject shall consist of Theory (written papers), Practical / Clinical and Viva-Voce.

### **Theory:**

There shall be **three** written question papers each carrying 100 marks. Each paper will be of **three** hours duration. In clinical subjects one paper out of this shall be on basic medical sciences. 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, skills related to laboratory procedures as well as testing students ability to make relevant and valid observations, interpretation of laboratory or experimental work relevant 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.

The maximum marks for Practical/Clinical shall be 150.

Viva-Voce Examination: Viva Voce examination should aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 50.

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 viva voce examination.

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% and above. Distinction will not be awarded for candidates passing the examination in more than one attempt.

**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.

**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
Diploma Course:	Maximum of 8 per day
DM/M.Ch	Maximum of 3 per day



## **SECTION II**

### **M. D. Radio-Diagnosis**

#### **Goal**

The goal of the course is to orient the students on various aspects of radiology by way of theory and practical training in the diseases of various systems of the human body. They should be able to apply knowledge and skills at secondary and tertiary level of medical care.

The postgraduate training course would be to train a MBBS doctor who will:

- Practice efficiently and effectively the specialty, backed by scientific knowledge and skill base.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing education in the specialty irrespective of whether he is in a teaching institution or is a practicing specialist.
- Be a motivated ‘teacher’ – defined as a specialist keen to share his knowledge and skills with a colleague or a junior or any learner.
- Well versed with medical ethics, consumer protection act and PCPNDT.

#### **Objectives**

A resident on completing his/her MD (Radio-diagnosis) should have acquired good basic knowledge in the various sub-specialties of radiology such as Neuro-radiology, GI-radiology, Uro-radiology, Vascular- radiology, Musculoskeletal, Interventional radiology, Emergency radiology, Pediatric radiology and Mammography, and be able to Independently conduct and interpret all routine and special radiological and imaging investigations.

Provide radiological services in acute emergency and trauma including its medico legal aspects.

Formulate basic research protocols and carry out research in the field of radiology related clinical problems.

To Undertake further specialization in any of the above mentioned branches in Radio-diagnosis such as Gastrointestinal radiology, Uro- radiology, Neuroradiology, Vascular radiology, Musculoskeletal radiology, Interventional radiology etc.

To interact with other specialists and super-specialists so that maximum benefit to the patient accrues.

Work as a Senior Resident/consultant in Radiodiagnosis and conduct the teaching programme for undergraduates, postgraduates as well as paramedical and technical personnel.

Organize CME in the specialty utilizing modern methods of teaching and evaluation

### **Postgraduate Training**

The training is spread over 3 years and includes following components:

General Principles Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training is skill oriented. Learning in postgraduate program is essentially self directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

Teaching Sessions - In addition to conducting and reporting of routine and special investigation in the area of posting under direct supervision, formal teaching session will be held on working days. These include seminars in physics and general radiology, journal clubs, case presentations; Interdepartmental meets, Film reading session

Teaching Schedule - departmental teaching schedule will be as follows:

- Seminars – once a week
- Case discussion - once a week
- Journal club - once a week
- Group discussion - once a week
- Film Reading / Physics Seminar Once a week Note:
- Research methodology and thesis.
- PCPNDT Act.
- Medical ethics
- OSPE
- Pedagogy

All sessions will be co-ordinated by the faculty members. All the teaching sessions to be assessed by the consultants at the end of session and graded Attendance of the Residents at various sessions should be at least 75%.

### **Practical radiography**

Filmless radiography techniques.

Radiography of the extremities

Radiography of the spine, abdomen, pelvic girdle and thorax

Radiography of the skull

Contrast techniques and interpretation of GI tract, biliary tract, etc.

Contrast techniques and interpretation of the Genito-urinary system

Contrast techniques and interpretation of the central nervous and Cardiovascular system

Macro-radiography and magnification techniques

Dental and portable radiography.

### **A. RADIOLOGICAL PHYSICS & X-RAY TECHNOLOGY:**

1. Radiation
2. Production of X –Rays
3. X- Ray Generators
4. Basic Interaction between X- Rays and Matter
5. Attenuation
6. Filters
7. X- Ray beam restrictors
8. Fluoroscopic imaging and image intensifier
9. Viewing & recording of the Fluoroscopic Image
10. Radiographic Image
11. Geometry of the Radiographic Image
12. Computed Tomography

13. Ultrasound
14. Digital Radiography
15. Magnetic Resonance Imaging
16. Radiation hazards & Protection
17. Atomic structure, Radioactive Isotopes
18. Positron Emission Tomography
19. Digital Subtraction Angiography
20. Pictorial Archiving & Communicating System (PACS)
21. DICOM

## **B. DARK ROOM TECHNIQUES:**

1. CR Cassette: .construction & care
2. Factors affecting image details
3. Factors affecting image contrast & density
4. Grids : construction & types
5. Cones & collimator
6. Computers in radio-diagnosis

## **C. BASIC RADIOLOGY I. IMAGING TECHNIQUES AND MODALITIES**

### **a) Department Organization:**

1. Digital Imaging and PACS
2. Processing in Computed Radiography
3. Intravascular Contrast Media
4. Radionuclide imaging General Principles
5. Mammography – conventional, Sonomammography, MR mammography, digital mammography, Ductography
6. Dual Energy X-ray Absorptiometry
7. Medicolegal issues in Diagnostic Radiology

8. Radiation Protection and patient doses in diagnostic radiology

## **II. RESPIRATORY SYSTEM:**

### **1.1 Techniques of Investigations**

1. Standard Techniques;
2. Digital Radiography
3. Magnetic Resonance Imaging
4. Ultrasound
5. Angiography
6. Lung Biopsy & Other Interventional Techniques.

### **1.2 Normal Chest:**

1. The Lungs (Radiological Anatomy)
2. The Central Airways
3. The Lungs beyond Hila
4. The Hila

### **1.2.5 The Mediastinum:**

1. CT & MRI
2. Plain film appearances of Mediastinal Masses:
3. Thyroid/ Para Thyroid Masses/ Thymic tumors/Thymic hyperplasia/Teratoma/ Germ Cell Tumor.
4. Mediastinal lymphadenopathy
5. Neurogenic Tumors
6. Extra medullar hematopoiesis/Mesenchymal tumors/ herniations of / Mediastinal lipomatosis/ Aneurysm.
7. Differential diagnosis.

### **1.3 The Chest Wall, Pleura & Diaphragm**

1 **Chest Wall:** i) Soft tissue /Breasts, ii) Ribs /Sternum/Clavicle, Spine 2

2. **The Pleura:** i) Normal Pleura, ii) Pleural Pathologies

### **3 The Diaphragm:**

i) Height/ Eventration/Movements/Paralysis

ii) Hernias/Trauma/Neoplasm

### **1.5 Pulmonary Infections in Adults.**

1. Pneumonia
2. Associated features and complications of pneumonia
3. Pulmonary tuberculosis
4. HIV & AIDS

### **1.6 Large Airway Obstruction**

Collapse: General features /Collapse of individual lobes / entire lung/ segmental collapse/  
Rounded /obstructive collapse Obstructive Pneumonitis/ Bronchoscope/Bronchiectasis

### **1.7 Pulmonary lobar Collapse essential considerations**

#### **1.8 Chronic airway obstruction**

1. Asthma:
2. Chronic Bronchitis and Emphysema
3. Bronchiolitis

#### **1.9 Pulmonary Neoplasm:**

1 Bronchial Carcinomas 2 Benign Pulmonary Tumors 3 Malignant Lymphoma 4 Metastases 5  
The solitary Pulmonary Nodule

### **2.0 Diffuse Pulmonary. Disease / Industrial Lung Disease / HRCT:**

1 Pulmonary Edema, 2 Diffuse pulmonary Hemorrhage, 3 Inhalation of particulate matter, 4  
Diffuse pulmonary Fibrosis, 5 Sarcoidosis / Collagen Vascular Disease / Systemic Vasculitidis /  
Lymphoid Disorders of Lungs / Pulmonary Eosinophilia / Drug induced Lung Disease.

## **2.1 Chest Trauma**

**2.2 Pulmonary thrombo-embolism: chest radiograph / radionuclide study / pulmonary arteriography CT / MRI.**

## **2.3 post operative and critically ill patients**

## **2.4 Congenital Pulmonary Anomalies:**

1. Abnormal development of lung bud
2. Abnormalities of separation of lung bud from foregut
3. Abnormalities of pulmonary vasculature
4. Ectopic hematomatous developments.

## **2.5 The infant and young child:**

1. Pathologies of diaphragm
2. Pleural abnormalities
3. Inflammation
4. Airway obstruction
5. Diffuse lung disease
6. Respiratory distress in newborn

## **2.6 Interventional techniques in thorax**

1. Biopsy procedures
2. Thoracic drainage procedures
3. Therapeutic embolisation
4. Dilatation and stenting techniques
5. Extraction techniques.

### **III. The Heart and Great Vessels**

#### **3.1 Cardiac Anatomy and Enlargement**

1. Plain radiography
2. Enlargement of various chambers on plain radiography

#### **3.2 Magnetic Resonance Imaging of heart and blood vessels**

#### **3.3 Congenital Heart Disease:**

1. General Principles
2. Left to right shunts
3. Other Congenital Heart Disease
4. Diagnostic signs to diagnose them

#### **3.4 Acquired Heart Disease**

1. Non Rheumatic/ Rheumatic Mitral VD
2. Tricuspid VD
3. Aortic VD
4. Diagnostic signs to diagnose them

#### **3.5 Ischemic Heart Disease**

1. Myocardial Infarction
2. Mechanical complications of MI
3. Diagnostic signs to diagnose them

#### **3.6 Pulmonary Circulation:**

1. Anatomy and Physiology
2. Pulmonary Vascularity in Heart Disease
3. Pulmonary Arterial hypertension/ Its Imaging
4. MR in Pulmonary Vascular Abnormalities.

#### **3.7 Imaging in Cardiomyopathy, Cardio Tumors, Trauma**

#### **3.8 The pericardium**

#### **3.9 Thoracic Aorta**



## **IV .THE GASTROINTESTINAL TRACT**

### **4.1 The Esophagus**

1. Anatomy and Functions
2. Methods of Examination
3. Pathologies of Esophagus
4. Motility Disorders
5. Extrinsic lesions/ miscellaneous conditions

### **4.2 The Stomach**

1. Radiological anatomy and methods of examination
2. Inflammatory Diseases
3. Neoplastic Conditions
4. Peptic ulcers
5. Volvulus

### **4.3 The Duodenum**

1. Anatomy and Normal Appearances
2. Methods of Radiological Examination
3. Peptic ulceration
4. Diverticula
5. Neoplasms benign and malignant

### **4.4 The Small Intestine**

1. Anatomy and normal appearances
2. Methods of radiological examination
3. Crohn's disease/Coeliac Disease/Neoplasms/various conditions.

### **4.5 The Large Bowel**

1. Anatomy and Normal Appearances
2. Methods of Radiological Examination
3. Tumors
4. Diverticular Disease
5. Colitis
6. AIDS
7. Miscellaneous Conditions

#### **4.6 Peritoneum, Mesentery and Omentum**

1. Peritoneal spaces and reflections
2. Abnormalities of Peritoneum
3. Abnormalities of Mesentery
4. Abnormalities of Omentum

#### **4.7 Gastrointestinal Angiography.**

1. General Consideration
2. Gastro intestinal bleeding

#### **4.8 Pediatric Gastrointestinal Radiology**

1. The Neonate
2. The Infant and Older Child

#### **4.9 Interventional Radiology in Gastrointestinal tract**

1. Introduction
2. Esophagus.
3. Stomach and Duodenum
4. Small Intestines
5. Colon and Rectum

### **V. Liver, Biliary tract, Pancreas, Endocrine System and Lymphoma Liver**

#### **5.1 Liver**

1. Normal and variant Anatomy
2. Liver Imaging Techniques
3. Diffuse Disease
4. Focal Disease
5. Intervention

#### **5.2 The Biliary Tract**

1. Anatomic Consideration
2. Methods of investigation
3. Biliary Disorders

### **5.3 Interventional Techniques Hepatobiliary System**

1. Liver Biopsy
2. Biliary Obstruction
3. Malignant Biliary Obstruction
4. Percutaneous Cholangiography and Biliary Drainage Procedures
5. Vascular Interventional Techniques in Hepatobiliary System

### **5.4 The Pancreas**

1. Embryology and Anatomy
2. Congenital Anomalies
3. Multisystem Diseases with Pancreatic involvement
4. Pancreatitis
5. Pancreatic Neoplasms
6. Trauma
7. Interventional Radiology in Pancreas

### **5.5 Imaging of the Endocrine System:**

1. Hypothalamic-Pituitary Axis
2. Pineal Gland
3. Thyroid Gland
4. Parathyroid Gland
5. Pancreatic & Gastrointestinal Endocrine Disorders
6. Carcinoid Tumors
7. Adrenal Glands

### **5.6 Reticuloendothelial Disorders: Lymphoma**

1. Histopathological Classification
2. Staging Investigation and Management
3. Extranodal Manifestation of Lymphoma
4. Monitoring response to therapy Reticuloendothelial Disorders:

### **5.7 The Spleen**

1. Imaging Techniques
2. Normal Anatomy
3. Splenomegaly

4. Benign Mass Lesions
5. Malignant Mass Lesions
6. Splenic Trauma

## **VI Genito Urinary Tract**

### **6.1 Methods of Investigation:**

### **6.2 Reno Vascular Disease:**

1. Renal Arteriography
2. Vascular Abnormalities
3. Radiological Management of Reno Vascular Disease

### **6.3 Renal Parenchymal Disease**

1. Normal Appearance of Kidney
2. Renal Parenchymal Disease
3. Parasitic Infections

### **6.4 Renal Masses**

1. Methods of Analysis
2. Pathological Renal Masses
3. Neoplastic Renal Masses

### **6.5 Calculus Disease & Urothelial Lesions**

1. Calculus Disease
2. Nephrocalcinosis
3. Urothelial Tumors

### **6.6 Urinary Obstruction:**

1. Pathophysiology
2. Causes of Obstruction

### **6.7 Radiological Evaluation of Urinary Bladder, Prostate & Urethra**

### **6.8 Injuries to the Genito Urinary Tract**

### **6.9 Renal Failure and Transplantation**

## **6.10 Interventional Uroradiology**

## **6.11 Imaging of the Kidneys & Urinary Tract in Children**

1. Embryology
2. Techniques
3. Interventional Procedure

## **6.12 Imaging of Pediatric Pelvis**

1. Imaging Techniques
2. Normal Anatomy
3. Congenital Anomalies
4. Pelvis Masses
5. Scrotal Disease

## **VII Skeletal System**

### **7.1 Skeletal Trauma**

### **7.2 Bone Tumors: General Characteristics & Benign Lesions**

### **7.3 Bone Tumors: Malignant Lesions**

### **7.4 Myeloproliferative and Similar Disorders**

- 7.4.1 Generalized/Localized Decreased in Bone Density
- 7.4.2 Generalized/Localized Increased in Bone Density
- 7.4.3 Delayed Skeletal Maturity

### **7.5 Metabolic and Endocrine Disease of the Skeletal**

### **7.6 Skeletal Dysplasias and Malformation Syndrome**

### **7.7 Joints Diseases**

- 1 Rheumatoid Arthritis
- 2 Other Connective Tissue Disease
- 3 Crystal Deposition Arthropathy
- 4 Degenerative Joint Disorders/Degenerative spine

5 Arthrography/ HPOA/ Pachy Dermoperiostitis

**7.8 Bone and Soft tissue Infection**

**7.9 Imaging of Soft tissue**

**7.10 The Radiology of Non Accidental Injury in Children**

**7.11 Paediatric Musculo -Skeletal Trauma**

**VIII. The Reproductive System**

**8.1 imaging in infertility**

**8.2 Imaging in Gynaecology**

**8.3 Hysterosalpingography**

**8.4 Male Reproductive System**

**IX Central Nerve System**

**9.1 Methods of Examination and Anatomy**

**9.2 Cranial and Intracranial Pathology:**

1. Tumors in Adults
2. Cerebro Vascular Disease and Non Traumatic Intracranial Hemorrhage
3. Infections, AIDS
4. Demyelinating and Metabolic Disease

**9.3 Spine: Method of Investigation**

**9.4 Imaging of Spinal Pathology**

**9.5 Neonatal Head and Spine Sonography**

**9.7 Neurology in Children – normal development & developmental disorders**

**X. The Orbit; ENT; Face; Teeth:**

**10.1. The Orbit**

1. Anatomy
2. Intraocular Abnormalities
3. Lacrimal Gland Tumors

4. Muscular Tumors
5. Intra/Extra Conal Tumors
6. Proptosis
7. Infection
8. Developmental abnormalities.

### **10.2 Ear, Nose and Throat Radiology (anatomy, congenital disorders, infection & neoplasms)**

1. The Ear
2. Nose and Paranasal Sinuses
3. Pharynx

### **10.3. Maxillofacial Radiology**

1. Fractures of Maxilla
2. TM Joint
3. Salivary Glands
4. Dental Radiology

### **XI) Interventional radiology:**

1. HSG & FTR
2. 4 vessel angiography
3. Biliary intervention( PTBD,PTC)
4. PCN
5. Laser ablation of varicose veins
6. RFA/ chemoembolisation of hepatic tumors and malformations.
7. Vertebroplasty.
8. Hemangioma and AVM management.
9. Tumor ablation

### **Teaching Program**

Each year should be taken as a unit for the purpose of calculating attendance.

Every student shall attend teaching and learning activities during each year as prescribed by the department and not absent him/her from work without valid reasons.

A list of teaching and learning activities designed to facilitate acquisition of essential knowledge and skills outlined is given below.

**1. Lectures:** Lectures are to be kept to a minimum. They may, however, be employed for teaching certain topics. Lectures may be didactic or integrated.

a) Didactic Lectures: Recommended for selected common topics for postgraduate students suggested topics are as follows :

- 1) Bio-statistics.
- 2) Use of library
- 3) Research Methods
- 4) Medical code of Conduct and Medical Ethics.
- 5) Communication Skills etc.
- 6) Initial introductory lectures about the subject.

These topics may preferably be taken up in the first few weeks of the 1<sup>st</sup> year.

b) Integrated Lectures: These are recommended to be taken by multidisciplinary teams for selected topics, e.g. Jaundice, Diabetes Mellitus and Thyroid etc.

**2. Journal Club:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the logbook relevant details. Further, every candidate must make a presentation from the allotted journal(s) of selected articles at least four times a year and a total of 12 presentations in three years. The presentations would be evaluated using checklists and would carry weightage for internal assessment. A timetable with names of the students and the moderator should be announced at the beginning of every year.

**3. Subject seminar:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the logbook relevant details. Further, every candidate must present on selected topics at least four times a year and a total of 12 seminar presentations in three years. The presentations would be evaluated using checklists and would carry weightage for internal assessment A timetable for the subject with names of the student and the moderator should be scheduled at the beginning of every year.

**4. Student Symposium:** Recommended as an optional multi disciplinary programme. The evaluation may be similar to that described for subject seminar.

**5. Film reading session-** once a week interesting x- ray films of teaching importance from the department are presented and discussed for imaging findings and possible diagnosis with differential diagnosis.



6. **Research methodology** - the student will attend the lecture series by medical education department about research methodology. This will be done preferably before the selection of thesis topic.
7. **Mortality & Morbidity Meetings:** Recommended once a month for all postgraduate students. Presentation will be done by rotation and by the students who had conducted/assisted anesthetic management.
8. **Group discussions:** Strongly recommended at least once a month. These meetings should be attended by postgraduate students and relevant entries must be made in the Logbook.
9. **Teaching skills:** Postgraduate students must teach Undergraduate students by taking demonstrations, lectures etc. Assessment is made using a checklist by faculty. Record of their participation should be kept in Logbook. Training of postgraduate students in Educational Technology is recommended.
10. **Continuing Medical Education Programmes (CME):** At least 2 state / national level CME programmes should be attended by each student in 3 years.
11. **Conferences:** one national conference during the training period and presentation of scientific paper / poster is encouraged.
12. **Medical ethics** – relevant topics will be covered in form of guest lectures by eminent faculties.
13. **OSPE** – to develop methodical approach for reporting of x-ray / USG /CT / MRI exercises will be developed for students depending on their radiological postings.
14. **Pedagogy-** sessions will be conducted once in three months for developing communications skills.

### **Posting**

The postgraduate students should be posted in all sections (conventional radiology, USG, CT, MRI etc), so that there is adequate exposure to all modalities.

The proposed duration of posting is as under-

Conventional	6 months
USG	8 months
CT	8 months
MRI	8 months
DSA	2 months
Mammography	2 months
Elective / selective	2 months

### **Dissertation**

1. 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.
2. The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis and comparison of results and drawing conclusions.
3. Every candidate shall submit to the ethical committee of the University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work 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.
4. Such synopsis will be reviewed and the dissertation topic will be approved / modified by ethical committee. No change in the dissertation topic or guide shall be made without prior approval of the University.
5. The dissertation should be written under the following headings:
  - i. Introduction
  - ii. Aims or Objectives of study
  - iii. Review of Literature
  - iv. Material and Methods

- v. Results
  - vi. Discussion
  - vii. Conclusion
  - viii. Summary
  - ix. References (Vancouver style)
  - x. Tables
  - xi. Annexures
6. The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexures. It should be neatly typed in double line spacing on one side of paper 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.
7. Four copies of dissertation thus prepared shall be submitted to the controller of examination, six months before final examination on or before the dates notified by the University.
8. The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.

### **Monitoring Learning Progress**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring of various teaching / learning activities must be done by the faculty of the department.

The learning out comes to be assessed should included: (i) Personal Attitudes, (ii) Acquisition of Knowledge, (iii) Clinical and operative skills, (iv) Teaching skills and (v) Dissertation.

i) ***Personal Attitudes.*** The essential items are:

- Initiative
- Organizational ability
- Potential to cope with stressful situations and undertake 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. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

ii) ***Acquisition of Knowledge:*** The methods used comprise of 'Log Book' which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The log book should periodically be validated by the supervisors. Some of the activities are listed. The list is not complete. Institutions may include additional activities, if so, desired.

*Journal Review Meeting (Journal Club):* The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting using a checklist

*Seminars:* 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

*Group discussion:* 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.

### iii) ***Clinical skills***

*Day to Day work:* 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.

*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 logbook.

- iv) *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
- v) *Dissertation in the Department:* Periodic presentations are to be made in the department. Initially the topic selected is to be presented before submission to the University for registration, again before finalization for critical evaluation and another before final submission of the completed work.
- v) *Periodic tests:* The 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, practicals / clinicals and viva voce.
- vii) *Work diary / Log Book-* Every candidate shall maintain a work diary and record his/her participation in the training programmes 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, if any conducted by the candidate.
- viii) *Records:* Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or MCI.

### **Log book**

The logbook is a record of the important activities of the candidates during his training; internal assessment should be based on the evaluation of the logbook. Collectively, logbooks are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate.

***Procedure for defaulters:*** 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.

## **Scheme of Examination**

### **i) Theory**

There shall be four question papers, each of three hours duration. Each paper shall consist of two long essay questions each question carrying 20 marks and 6 short essay questions each carrying 10 marks. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers. Details of distribution of topics for each paper will be as follows:

#### **Paper – I**

**100 marks**

Basic Sciences as applied to Radio-Diagnosis –Radiation Physics, anatomy & physiology

- Radiological physics & x-ray technology.
- Dark room.
- Imaging techniques.
- Mammography – technique and interpretation.
- Anatomy, development & physiology as applicable to radiology.

#### **Paper – II**

**100 marks**

- Respiratory system
- Gastrointestinal system and abdomen (including Pancreas, Adrenals, Biliary tree, Spleen, Liver and acute abdomen).
- Recent advances & interventions as applicable to the above topics

#### **Paper – III**

**100 marks**

- Cardiovascular system including Lymphatic system, Arteriography.
- Urogenital system including Scrotum and Obstetrics and Gynaecology
- Musculoskeletal system and soft tissue.
- Recent advances & interventions as applicable to the above topics.

#### **Paper – IV**

**100 marks**

- Skull and Central Nervous system; ENT, Eyes.
- Head & Neck.
- Recent advances and interventions as applicable to the above topics.

### **ii. Clinical**

**300 marks**

- a) Long Case – One - **120 Marks**
- b) Short Cases – two - **120 Marks (60 x 2)**
- c) Spotters (30 films) - **60 Marks**

**iii. Viva-Voce****100 marks**

- |   |          |
|---|----------|
| 1. Newer imaging techniques and instrumentation | 20 marks |
| 2. Physics Viva-voce ;                          | 40 Marks |
| 3. Log book                                     | 20 marks |
| 4. Pedagogy Exercise:                           | 10 marks |
| 5. OSPE   | 10 Marks |

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

Maximum marks for	Theory	Practical	Viva	Grand Total
MD Radio-Diagnosis	400	300	100	800

### **Recommended Text Books:**

Text Book of Radiology and Imaging	David Sutton
Grainger & Allison's Diagnostic Radiology	Grainger
Clark Positioning Radiography	Clark
Fundamental Physics of Radiology	Christensen
Radiographic Anatomy	Meschan
Diagnostic Ultrasound	Sarhi
Essentials of Radiological imaging	Paul & Juhls

### **Reference Books**

Felson's principle of chest roentgenology	Felson
Diagnostic Ultrasound	Rummack
Diagnostic neuroradiology	Anne Osborn
Aids to differential diagnostic	Chapman
Diagnostic Radiology CT & MRI of whole body	Haaga
Pediatric diagnostic imaging	Caffey's
High Resolution Computed Tomography	W.RWebb

### **Journals**

- 1) Indian Journal of Radiology and Imaging
- 2) Clinical Radiology
- 3) British Journal of Radiology
- 4) American Journal of Roentgenology
- 5) Radiology clinics in North America
- 6) Recent Advances in Radiology and Imaging
- 7) Journal of Diagnostic Medical Sonography
- 8) Seminar in Ultrasound
- 9) Clinical Nuclear Medicine
- 10) Radiographics & Radiology



## SECTION - III

### 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

Heteronomous 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**, 2<sup>nd</sup> Ed, 2004 Jaypee Brothers, Bangalore/-
2. Ethical guidelines for biomedical research on human participants, ICMR publication 2006
3. Santosh Kumar: the elements of research, writing and editing 1994, Dept of Urology, JIPMER, Pondicherry
4. Srinivas D.K et al, 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 J Med 1991
7. Kirkwood B.R, Essentials of Medical Statistics, 1<sup>st</sup> Ed., Oxford: Blackwell Scientific Publications 1998
8. Mahajan B.K. Methods in bio statistics for medical students, 5<sup>th</sup> 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, 4<sup>th</sup> 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 Evaluation for Health Educators, Jones & Bartlett Learning.
15. David E. Kern, Patricia 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.

**SECTION IV**

**Format of Model Check Lists**

**Check List-I.**

**MODEL CHECK-LIST FOR EVALUATION OF SEMINAR BASIC PRESENTATIONS**

Name of the Student: \_\_\_\_\_

Name of the Faculty/Observer: \_\_\_\_\_ Date: \_\_\_\_\_

**SEMINAR BASIC**

**TOPIC:**

Evaluation by staff								
Clarity of presentation								
Contents of presentation								
Understanding of subject								
Completeness of presentation								
Extent of cross references								
Other relevant publications								
Answering questioning on subject								
Time scheduling								
Audio-visual aids								
Over all performance								
<b>TOTAL</b>								

**Check List-II.**

**MODEL CHECK-LIST FOR EVALUATION OF SEMINAR PRESENTATIONS**

Name of the Student: \_\_\_\_\_

Name of the Faculty/Observer: \_\_\_\_\_ Date: \_\_\_\_\_

**SEMINAR ADVANCED**

Evaluation by staff								
Clarity of presentation								
Contents of presentation								
Understanding of subject								
Completeness of presentation								
Extent of cross references								
Other relevant publications								
Answering questioning on subject								
Time scheduling								
Audio-visual aids								
Over all performance								
<b>Total</b>								

**Check List-III.**

**MODEL CHECK-LIST FOR EVALUATION OF JOURNAL PRESENTATIONS**

Name of the Student: \_\_\_\_\_

Name of the Faculty/Observer: \_\_\_\_\_ Date: \_\_\_\_\_

**JOURNAL CLUB**

Evaluation by staff								
Clarity of presentation								
Contents of presentation								
Understanding of journal								
Extent of cross references								
Answering questioning on subject								
Time scheduling								
Audio-visual aids								
Over all performance								
<b>TOTAL</b>								

**Check List-IV**

**MODEL CHECK-LIST FOR EVALUATION OF CASE PRESENTATIONS**

Name of the Student: \_\_\_\_\_

Name of the Faculty/Observer: \_\_\_\_\_ Date: \_\_\_\_\_

**CASE PRESENTATION**

Evaluation by staff								
Brief clinical history								
Identifying the lesions								
Definitive diagnosis								
Differential diagnosis								
Defending the diagnosis								
Answering the questions								
Recent investigations For the disease								
Time scheduling								
Audio-visual aids								
Over all performance								
<b>TOTAL</b>								



### Check List-V

#### MODEL CHECK-LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

Name of the Student: \_\_\_\_\_

Name of the Faculty/Observer: \_\_\_\_\_ Date: \_\_\_\_\_

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 sequence 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 A.V. aids appropriately		

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**Check List-VI**

**MODEL CHECK LIST FOR DISSERTATION PRESENTATION**

Name of the Student: \_\_\_\_\_

Name of the Faculty: \_\_\_\_\_ Date: \_\_\_\_\_

Sl. No.	Points to be considered	Poor 0	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					
	<b>Total Score</b>					

**Check List-VII**

**CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE**

Name of the Student: \_\_\_\_\_

Name of the Faculty: \_\_\_\_\_ Date: \_\_\_\_\_

Sl. No.	Items for observation during presentations	Poor	Below Average	Average	Good	Very Good
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					
	<b>Total Score</b>					

**Check List-VIII**

**Model Checklists for Assessment of Scientific Papers for Publication**

<b>Sl. No.</b>	<b>Criteria</b>	<b>Distribution of Marks</b>	<b>Marks awarded</b>
1.	Originality	10	
2.	Clarity & Quality of presentation	10	
3.	Relevance	10	
4.	Review of Literature	10	
5.	Quantum of works involved	15	
6.	Methodology, Sensitivity, Sample size, controlled, not Controlled study etc.,	25	
7.	Advancement of knowledge	10	
	<b>Total</b>	90	

**Signature of the Evaluator** \_\_\_\_\_

**Name** \_\_\_\_\_

**Designation** \_\_\_\_\_





## LOG BOOK

Table 3: Procedures performed

Name: \_\_\_\_\_ Admission Year: \_\_\_\_\_

College: BLDE UNIVERSITY'S SHRI: B.M.PATIL MEDICAL COLLEGE, BIJAPUR-586103

<b>Date</b>	<b>Name</b>	<b>ID No.</b>	<b>Procedure</b>	<b>Category O, A, PA, PI*</b>

- \* Key**
- 0 - Observed
  - A - Assisted a senior consultant
  - PA - Performed procedure under the direct supervision of a senior consultant.
  - PI - performed independently.





**Model Overall Assessment Sheet**

Name of the College: BLDE UNIVERSITY'S SHRI: B.M.PATIL MEDICAL COLLEGE,

VIJAYAPUR-586103

Academic Year: \_\_\_\_\_

Sl. No.	Faculty Member & Others	Name of Student and Mean Score									
		A	B	C	D	E	F	G	H	I	J
1											
2											
3											
4											
5											
<b>Total Score</b>											

**Note: Use separate sheet for each year**

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