SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH
(A Deemed to be University Declared under Section 3 of UGC Act, 1956)
Comprising Sri DevarajUrs Medical College
[Constituent Unit of Sri DevarajUrs Educational Trust for Backward Classes (Regd.)]
TAMAKA, KOLAR-563103, KARNATAKA, INDIA
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(With effect from 2019-2020 batches)

Competency Based Postgraduate Curriculum for Doctor of Medicine Microbiology

Dean Faculty Of Medicine
Sri Devaraj Urs Academy of Higher Education & Research, Tamaka, Kolar.

Approved as per BOM-56-2019, (Resolution No-LVI.06) Dated-20/12/2019

REGULATIONS GOVERNING

POST GRADUATE DEGREE PROGRAMMES

CURRICULUM 2019-2020

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH

Comprising Sri Devaraj Urs Medical College

A Deemed To Be University

Declared under section 3 of UGC, Act,1956,
MHRD GOI NO.F,9-36/2006-U.3(A), Dt.25th may 2007
Post box No.62, Tamaka, Kolar-563101, Karnataka, INDIA
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REGULATIONS AND CURRICULA
FOR
POST GRADUATE DEGREE PROGRAMMES
IN
MEDICAL SCIENCES
2019-2020

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VISION:

"UNIVERSITY OF EXCELLENCE - KNOWLEDGE FOR POSTERITY"

MISSION:

1. To be a global centre of excellence for Teaching, Training and Research in the field of Higher education.
2. To inculcate scientific temper, research attitude and social accountability amongst faculty and students.
3. To promote with value based education for the overall personality development and leadership qualities to serve the humanity.

OBJECTIVES:

1. To provide need based infrastructure and facilities to students to become responsible professionals with social commitment and accountability.
2. To implement effectively innovative programs in teaching learning and evaluation.
3. To impart scientific and socio cultural temperament among students to forge national identity and needs.
4. To provide instruction and training in Basic and advanced branches of learning.
5. To provide facilities for research for the advancement and dissemination of knowledge.
6. To undertake extra mural studies, consultancy, extension programmes and field outreach services for the development of society.
7. To collaborate with other Universities, Institutions of excellence and research organizations within the country and outside for the purpose of teaching, training and research.
8. To undertake need based activities for the betterment of socially and educationally backward society.

At a glance this logo is abstract, yet it contains the vital ingredients for an institution like Sri Devaraj Urs Academy of Higher Education and Research, Tamaka, Kolar.

The institution's medical background, Humanitarian values, Compassion,

Approachability, Social Commitment and the subsequent research towards the most precious thing, the human life, is the core theme.

The graphic form of a person in the centre of a bud represents the humanity. It denotes the growing process of life and its existence. And the two hands safeguarding them show the care and a sense of security. It is also capable of holding something within the vast expanse of knowledge by the University for the People's benefit. Hence, the motto "Knowledge for Posterity" is very appropriate and gives a punch in Red. The four light blue half circles (smaller to bigger) depict the unending quest for knowledge and imparting it to a wider horizon, growing higher and higher.
And finally, the whole unit is embedded in a "D" shaped graphic template as background to give it a corporate identity.

COLORS USED:

Deep Blue: Credible, Confident and Dependable. Represents Peace, Tranquility, Stability, Harmony, Trust, Security, Cleanliness and Loyalty

Light Blue: For Sky and Water (color scheme for 4 half circles)

Red: A dominant color for strengths.

Green: For Nature, Health and Generosity. It is cool quality soothes and has great healing powers

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No. SDUAHER/KLR/ADMN/1322/2020-21 Date:12/10/2020

NOTIFICATION

Sub: Regulations, curricula and syllabi of Postgraduate medical degree programmes in Preclinical, Paraclinical and clinical subjects- reg

Ref.

I. **Proceedings of the Academic Council meetings**
II. **Proceeding of the Board of Management meetings**
III. **MCI notifications**
IV. **SDUAHER notification:**

Academic Council Meetings		**Board of Management Meetings**	
19th	17.11.2014	34th	19.06.2015
21st	25.04.2015	36th	04.12.2015
22nd	18.11.2015	44th	23.06.2017
27th	29.04.2017	45th	09.11.2017
28th	04.11.2017	48th	20.06.2018
30th	05.05.2018	50th	22.12.2018
31st	03.11.2018	54th	06.07.2019
33rd	04.06.2019	56th	20.12.2019
34th	15.11.2019	59th	09.10.2020
36th	30.09.2020		

Agenda discussed:

- Objectives of external postings of Post Graduates
- Internal & External postings of PG's with assessment tools
- Minimum marks to be scored in PG theory examinations
- Topics to be included in Forensic medicine and toxicology in paper 4 for PG students
- Work placed based assessment for PG students
- Introduction of Assessment of AETCOM in formative/summative assessment
- Design and development of E-portfolio for all PG's
- Patient handover as common EPA for all departments
- Preparation of Question paper from question bank using software

- Coding of answer booklet by software enabled barcoding
- Development of CBME in PG programmes
- Quarterly formative assessment as an assessment tool for all PGs
- Start course in MD psychiatry
- Implement E- Portfolio of PG's
- Discontinuation of practice for 5th evaluation in PG exam
- Post graduate training programme MCI-PG Medical Education Regulations 2000, amended upto May 2018
- Approval of EPA's as competency based medical training for PG's
- Work placed based assessment as part of quarterly assessment for PG's
- PLO's for all programmes

V. MCI Notifications

- MCI Notification dated 09-12-2009, vide No.MCI.18(1)/2009-Med.55455
- No. MCI-23(1)/2014/Med/153433 Dated 28-01-2015
- MCI Guidelines 2017(CBME based)
- MCI postgraduate medical education regulations 2000 amended upto 2018
- (clause 13.2,gazette notification dated 05/04/2018)
- Basic Programme in Biomedical Research(MCI-23(1)/2019-Med./141602 dated 27-08-2019).
- MCI-12(2)/2019-Med.Misc./189334.- Dated:12th February 2020
- MCI-18(1)/2020-Med./121415.-date 16/09/2020- (District Residency Programme' (DRP)

VI. Office Memorandum No. SDUAHER / KLR/ ADMN /8071/2019- 20 Dated 22/06/2019

VII. SDUAHER / KLR/ ADMN /1571/2019-20 dated 12/09/2019

REGULATIONS FOR POST GRADUATE DEGREE PROGRAMME IN MEDICAL SCIENCES

CHAPTER- I

1. Branches of Study

1.1 Postgraduate Degree Programme
The following programmes may be pursued.

A. M.D. (Doctor of Medicine)

1. Anatomy
2. Physiology
3. Biochemistry
4. Pharmacology
5. Pathology
6. Microbiology
7. Forensic Medicine
8. Community Medicine
9. General Medicine
10. Dermatology, Venereology and Leprosy
11. Anesthesiology
12. Paediatrics
13. Radio-Diagnosis
14. Psychiatry

B. M.S. (Master of Surgery)

1. General Surgery
2. Obstetrics and Gynecology
3. Orthopedics
4. Ophthalmology
5. OTO-Rhino-Laryngology

1.2. Eligibility for Admission

1.2.1 MD / MS Degree Programme: A candidate affiliated to this academy and who has passed final year M.B.B.S. examination after pursuing a study in a medical college recognised by the Medical Council of India, from arecognised Medical College affiliated to any other Academy recognised as equivalent thereto, and has completed one year compulsory rotating internship in a teaching Institution or other Institution recognised by the Medical Council of India, and has obtained permanent registration of any State Medical Council will be eligible foradmission.

1.2.2 A Candidate seeking admission should have successfully cleared the qualifying examination – NEET (National Eligibility cum Entrance Test) conducted by NBE (National Board of Examination).

1.3. Obtaining Eligibility Certificate by the Academy before making Admission

No candidate will be admitted for any postgraduate degree programme unless the candidate has obtained and produced the eligibility certificate issued by the Academy. The candidate has to make an application to the Academy with the following documents along with the prescribed fee:

1. S.S.L.C Marks card
2. 10+2 Certificate
3. All MBBS Marks Cards
4. Internship Completion Certificate
5. Attempt / Academic certificate
6. Degree Certificate
7. Transfer Certificate
8. Migration Certificate
9. Study/Bonafide Certificate
10. Character & Conduct certificate
11. MCI Recognisized Certificate by college
12. Karnataka Medical Council/State medical council
13. MCC Allotment Letter
14. NEET Admission Ticket
15. NEET Rank card
16. Caste (SC/ST) /OBC certificate (domicile) & Income Certificate
17. Aadhar card of both candidate and parents / sponsors
18. Bond for SR Ship
19. Remaining years fee bond

NOTE: The NRI/NRI Sponsor students have to submit the documents as per the MCC/DGHS Criteria for NRI status

Candidates should obtain the Eligibility Certificate before the last date for admission as notified by the Academy.

A candidate who has been admitted to postgraduate programme should register his / her name in the Academy within a month of admission after paying the registration fee.

1.4. Intake of Students

The intake of students to each programme will be in accordance with the ordinance in this behalf.

1.5. Duration of Study

a) M.D /M.S Degree Programme

The programme of study will be for a period of 3 years consisting of 6 academic terms.

1.6. Method of training

The training of postgraduate for degree will be residency pattern 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 participate in seminars, group discussions, grand rounds, case demonstration, clinics, journal review meetings, CPC and clinical meetings. Every candidate should participate in the teaching and training programme of undergraduate students. Training includes involvement in laboratory and experimental work and research studies.

1.6.1. Teaching methodology

1.6.1.1 Includes Didactic lectures, small group discussion such as seminars, journal clubs, symposia, reviews and guest lectures for acquiring theoretical knowledge.

1.6.1.2 Bedside teaching, grand rounds, structured interactive group discussions and clinical demonstrations should be the hallmark of clinical/practical learning with appropriate emphasis on e-learning. Student should have hand-on training in performing various procedures and ability tointerpret varioustests/investigations.

1.6.1.3 Exposure to newer specialized diagnostic/therapeutic procedures concerning her/his subject should be given.

1.6.4 Self-learning tools like assignments and case-based learning should be promoted.

1.6.2. Clinical postings and Rotation of posting

Basic medical sciences students will be posted to allied and relevant clinical departments or institutions. Students working in clinical departments will be posted to basic medical sciences and allied speciality departments or institutions. It should be done as concurrent studies during the 1st year of training Similarly Inter-unit rotation in the department should be done for a period of up to one year. Rotation in appropriate related subspecialties **should not extend for a period exceeding 06 months.** Postings to other specialty departments will be during the second year.

All postgraduates' students pursuing MD/MS in broad specialities shall undergo a compulsory residential rotation of three months in District Hospital / District Health system as a part of the course curriculum. Such rotation shall take place in the 3rd or 4th or 5th semester of the postgraduates programme. This rotation shall be termed as District residency programme and the postgraduate medical student undergoing training shall be termed as a District Resident.

Satisfactory completion of the District Residency shall be an essential condition before the candidate is allowed to appear in the final examination of the respective postgraduate course. The District Residency Programme Coordinator (DRPC) shall issue certificate of satisfactory completion of DRP and report on the performance of the District Resident on a prescribed format to the concerned Medical College and the Government of State/Union Territory. No. MCI-18(1)/2020-Med./121415.—date16/09/2020

1.6.3. Clinical meetings:

Clinical meetings will be conducted within the department weekly and also inter departmental meetings will be conducted monthly to discuss uncommon/interesting cases.

1.6.4 Log book:

Each student should maintain a logbook and document day to-day activities like documentation of ward work, teaching and learning activities , clinical case discussion, procedures performed , seminars, journal clubs, symposium ,CPC meets, inter-unit/interdepartmental teaching sessions, mortality meets, workshops, CME/conferences .The Log books will be checked and assessed periodically by the faculty members imparting the training. This will in turn be evaluated/assessed by an external reviewer appointed by the Director of PG Studies biannually during the months of July and January. The log book should be preserved and presented at the time of summative examinations conducted by the Academy.

1.6.5 Research activities:

1.6.5.1 The student should know the basic concepts of research methodology plan a research project and be able to retrieve information from the library. The student should have a basic knowledge of statistics.

1.6.5.2 A postgraduate student of a postgraduate degree programme in broad specialities should present one poster presentation, read one paper at a national/state conference and publish 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 eligible to appear at the postgraduate degree examination. MCI Notification No.18(1)/2009/ medicine/55455 Dated:09-12-2009

1.6.5.3 Department should encourage e-learning activities.

1.6.6 Basic Programme in Biomedical Research:

In order to improve the research skills of post-graduate students, the Board of Governors (BoG) has recommended a uniform research methodology programme across the country, the online programme, "Basic programme in Bio-medical Research", will be offered by ICMR-National Institute of Epidemiology (ICMR-NIE), Chennai (www.nie.gov.in). The programme will explain fundamental concepts in

Research methodology. This programme is being offered through SWAYAM programme of ministry of human resource development through SWAYAM NPTEL (http://swayam.gov.in/nc details/NPTEL)

1.6.7 Synopsis and Dissertation:

Every candidate will submit to the Registrar of the Academy in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within six months from the date of commencement of the programme on or before the dates notified by the Academy. The synopsis will be sent through the properchannel.

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

Every candidate pursuing MD/MS degree programme 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 will 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 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 drawingconclusions.

The dissertation should be written under the following headings:

- Introduction
- Aims or Objectives of study
- Review of Literature
- Material and Methods
- Results
- Discussion
- Conclusion
- Summary
- References
- Tables
- Annexures

The written text of dissertation will be not less than 50 pages and will 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 (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The dissertation will be certified by the guide, Head of the department and Head of theInstitution.

Six hard copies of dissertation and one soft copy thus prepared will be submitted to

the Controller of Examination (CoE), six months before final examination on or before the dates notified by the Academy.

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

Guide: The academic qualification and teaching experience required for recognition by this Academy as a guide for dissertation work is as per Medical Council of India, Minimum Qualifications for Teachers in Medical Institutions Regulations, 1998. Teachers in a medical college/institution having a total of eight years teaching experience out of which at least four years teaching experience as Assistant Professor with at least one research publication in indexed journals gained after obtaining post graduate degree will be recognized as post graduate teachers. (No.MCI- 12(2)/2019-Med.Misc./189334.- Dated: 12th February 2020)

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 Sri Devaraj Urs Academy /Medical Council of India. The co- guide will be a recognized post graduate teacher of Sri Devaraj Urs Academy.

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 academy.

1.6.8 Journal Club:

Journal club will be conducted once a week. All the PG students are expected to attend and actively participate in discussion and enter the relevant details in the log book. Further, every candidate must make a presentation from the allotted journal(s), selected articles, at least four times a year and a total of 12 presentations in three years. The presentations would be evaluated using check lists and would carry weightage for internal assessment (See checklist - I in Chapter V). A time table with names of the student and the moderator should be announced periodically, (Quarterly).

1.6.9 Subject Seminar:

Subject seminar will be conducted once a week. All the PG students are expected to attend and actively participate in discussion and enter the relevant details in the log book, Further, every candidate must present selected topics at least four times a year and a total of 12 seminar presentations in three years. The presentations would be evaluated using check lists and would carry weightage for internal assessment (See checklist-II in Chapter V). A timetable for the subject with names of the student and the moderator should be announced periodically, (Quarterly).

1.6.10 Student Symposium:

Student Symposium as an additional inter departmental programme will be conducted periodically, once in three months. The evaluation may be similar to that described for subject seminar.

1.6.11 Ward Rounds:

Ward rounds are service or teaching rounds.

i. ***Service Rounds:*** Postgraduate students and Interns will do every day for the care of the patients. Newly admitted patients should be worked up.by the PGs and presented to the seniors the following day.

ii. ***Teaching Rounds:*** Every unit will have 'grand rounds' for teaching purpose.
A diary should be maintained for day to day activities by the students.
Entries of (i) and (ii) should be made in the Log book.

1.6.12 Clinico-Pathological Conference:

CPC will be conducted once in two months for all post graduate students. Presentation will be done by rotation. If cases are not available due to lack of clinical postmortems, it could be supplemented by published CPCs.

1.6.13 Inter Departmental Meetings:

These will be conducted once a month. These meetings will be attended by post graduate students and relevant entries must be made in the Log Book.

1.6.14 Teaching & Learning Skills:

Post graduate students must teach under graduate students (Eg. medical, nursing) by taking demonstrations, bed side clinics, tutorials, lectures etc.

Assessment is made using a checklist by surgery faculty as well as students. (See model checklist -III in Chapter V). Record of their participation should be documented in the Log book. Training of post graduate students in Educational Science and Technology is recommended.

Further, all postgraduate students are required to attend at least about 35 hours of didactic lecture as notified by the individual departments.

1.6.15 Entrustable Professional Activity:

EPAs are units of professional practice, defined as tasks or responsibilities to be entrusted to the unsupervised execution by a trainee once he or she has attained sufficient specific competence. EPAs are independently executable, observable, and measurable in their process and outcome, and therefore, suitable for entrustment decisions. The Entrustable professional activity (EPA) concept allows faculty to make competency-based decisions on the level of supervision required by trainees. The Academy has identified few such EPA's for all students in various degree programme. These are:

1. EPA 1: Gather a history and perform a physical examination

2. EPA 2: Prioritize a differential diagnosis following a clinical encounter
3. EPA 3: Recommend and interpret common diagnostic and screening tests
4. EPA 4: Obtain informed consent for tests and / or procedures
5. EPA 5: Recognize a patient requiring urgent or emergent care and initiate evaluation and management
6. EPA 6: Give or receive a patient handover to transition care responsibility
7. EPA 7: Undertake complete patient monitoring including the preoperative and post-operative care of the patient.
8. EPA 8: Provide basic and advanced lifesaving support services in emergency situations
9. EPA 9: Collaborate as a member of an inter-professional team
10. EPA 10: Perform general procedures of a physician
11. EPA 11: Enter and discuss orders and prescriptions
12. EPA 12: Prepare a comprehensive discharge summary.
13. EPA 13: Form clinical questions and retrieve evidence to advance patient care.

However in addition to these common EPA's individual departments are advised to develop their own EPA's.

1.7. Continuing Medical Education (CME):

Every PG student must attend at least 2 CME programes either at state/regional /zonal/national levels.

1.8. Conferences:

Attending conferences is optional. However it has to be encouraged. All students are encouraged to attend conferences (at state/national/international levels) to enable them to make paper/poster presentations, which is a mandatory requirement to fulfill before appearing for final examinations.

1.9. Attendance, Progress and Conduct:

- A candidate pursuing degree programme will 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 programme.
- Academic term of 6 months will be taken as a unit for the purpose of calculating attendance. The candidate should have 80% attendance in each academic term of 6 months.

- Every student will 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 term of the post graduate programme. Provided further, leave of any kind will not be counted as part of academic term without prejudice to minimum 80% attendance of training period every term.
- All the candidates joining the Post Graduate training programme will work as 'Full Time Residents' during the period of training and will attend not less than 80% (Eighty percent) of the imparted training during each academic term. Including assignments, full time responsibilities and participation in all facets of the education process.
- Any student who fails to complete the programme in the manner stated above will not be permitted to appear for the Academy Examinations.
- A Postgraduate student of a postgraduate degree programme would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published / accepted for publication/sent for publication during the period of postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.
  Ref: As MCI Notification dated 09-12-2009, vide No.MCI.18 (1)/2009- Med.55455 and Para No.4.

Procedure for defaulters:

Every department will have a committee containing Head of the department and PG guides 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.

2 Monitoring Progress of Studies:

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 will be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Chapter V.

The learning out comes to be assessed should include:

- Personal Attitudes,
- Acquisition of Knowledge,
- Clinical and operative skills,
- Teaching skills and
- Dissertation.

a. Personal Attitudes:

The essential items are:

- Caring attitudes
- Initiative
- Organisational ability
- Potential to cope with stressful situations and undertake responsibility
- Trustworthiness 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, self, peers, faculty from the unit and nurses. (Multi source feedback MSF)checklistXII

b. Acquisition of Knowledge:

The methods used comprise of

2.1 Log book: (Check List – XIII Chapter – V)

'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 must be recorded. The log book will periodically be validated by the supervisors. Some of the activities are listed. During the training period, the post graduate student should maintain a Log Book indicating various teaching / learning activities, duration of the postings/work done in Wards including super specialty, OPDs and Casualty. This should indicate the specified number of cases for clinical discussion, procedures and operations observed, assisted and performed /presented seminars and review articles from various journals in inter- unit/inter departmental teaching sessions.

The purpose of the Log Book is to:

- Help maintain a record of the work done during training,
- Enable Consultants to have direct information about the work; intervene if necessary,
- Use it to assess the experience gained periodically.

The log book will be used to aid the internal evaluation of the student.
The Log books will be checked and assessed periodically, monthly basis by guide / head of the unit/ head of the department and biannually by external reviewer.

Procedure for defaulters:
Every department will 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 will 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

2.2 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 (see Model Checklist -I, in Chapter V)

2.3 Seminars / Symposia:
The topics will 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 will be assessed using a checklist (see Model Checklist -II, Chapter V)

2.4 Clinico'-Pathological conferences:
This will 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.

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

2.6 Clinical skills
Day to Day work: Skills in outpatient and ward work will be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills (see Model Checklist -V, Chapter V). – Mini CEX (Model check list VII, Chapter V)

2.7 Clinical meetings (Clinical Presentations :) *:*
Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see Model checklist V, Chapter V).

2.8 Clinical and Operative skills:

The candidate will be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by DOPS (Model check list VI, Chapter V). Particulars are recorded by the student in the log book.

2.9 Teaching skills:

Post graduates are required to teach undergraduate medical students and paramedical students, if any *(as a part of Post graduate training)*. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist III, Chapter V) - Microteaching Pedagogy (Model check list VIII, Chapter V)

2.10 Dissertation in the Department:

Periodic presentations must be made in the department. Initially the topic selected is to be presented before submission to the Academy for registration and again before finalization for critical evaluation and before final submission of the completed work (See Model Checklist IX & X, Chapter V)

2.11 Periodic tests:

The concerned departments will conduct quarterly tests. The final test will be held three months before the final examination. The tests may include written papers, practical's / clinical and viva voce. Records and marks obtained in such tests will be maintained by the Head of the Department and sent to the Academy, when called for.

2.12 Work diary / Log Book-

Every candidate will 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 must be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

2.13 Records:

Monthly and quarterly reviews of records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the Academy, when called for.

3. ASSESSMENT:

3.1 Formative Assessment

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 to be done by the staff of the department based on participation of students in various teaching /learning

activities. It may be structured and assessment be done using checklists that assess, various aspects. This includes assessment of patient care, procedural & academic skills, interpersonal skills, professionalism, self-directed learning and ability to practice in the system.

Checklists are given in Chapter-V

Assessment during the MS/MD training should be based on:

Assessment at end of rotation (Quarterly Postgraduate Student's Appraisal Form) by the Unit Head. The student to be assessed periodically as per categories listed in **Postgraduate Student Appraisal Form** (See Model checklist-X, Chapter V).

Multisource Feedback (MSF) – Quarterly

MSFs should be obtained quarterly from:- 2 from faculty of the unit/department; 2 from peers posted in the unit; 2 from interns,2 from staff nurses from the areas attached to the unit,2 from patient/patient relative. (Checklist XII – Chapter V)

Periodic assessment –The Quarterly tests may include written papers (theory), practical's / clinical and viva voce.

Quarterly Postgraduate Student's Appraisal Form (See Model checklist-X I, Chapter V).

- Journal based/ recent advances learning
- Patient based or Skill based learning
- Self-directed learning and teaching
- Departmental & interdepartmental learning activity
- External & Outreach activities/ Continuing Medical Education (CME)
- Attendance, Progress and Conduct

A candidate pursuing degree programme 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 postgraduateprogramme.

Academic term of 6 months will be taken as a unit for the purpose of calculating attendance. Every student will 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 term of the post graduate programme. Provided further, leave of any kind will not be counted as part of academic term without prejudice to minimum 80% attendance of training period every term.

All the candidates joining the Post Graduate training programme will work as 'Full Time Residents' during the period of training and will attend not less than 80% (Eighty percent) of the imparted training during Academic Term of 6 months including assignments, full time responsibilities and participation in all facets of the education process.
Any student who fails to complete the programme in the manner stated above will not be permitted to appear for the Academy Examinations.

A Postgraduate student of a postgraduate degree programme in broad specialities/super specialities would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published / accepted for publication/sent for publication during the period of postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.
Ref: As MCI Notification dated 09-12-2009, vide No.MCI.18 (1)/2009-Med.55455 and Para No.4.

Procedure for defaulters:

Every department should have a committee containing Head of the department and PG guides 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.

3.2 Scheme of examinations

Summative assessment

The summative examination would be carried out as per the Rules given in POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000 and amended up to 2018. (The Clause 14 under the heading "EXAMINATION" shall be substituted in terms of Gazette Notification published on 05.04.2018).
The examination will be in three parts:

3.2.1 DISSERTATION

Every post graduate student will carry out work on an assigned research project under the guidance of a recognized Post Graduate Teacher, the result of which will be written and submitted in the form of a dissertation. Work for writing the dissertation is aimed at contributing to the development of a spirit of enquiry, besides exposing the candidate to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature. Dissertation will be submitted at

least six months before the Theory and Clinical / Practical examination. The dissertation will be examined by a minimum of three examiners; one internal and two external examiners, who will not be the examiners for Theory and Clinical examination. A candidate will be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the dissertation by the examiners.

3.2.2. THEORY

There will be four question papers, each of three hours duration. Each paper will consist of ten questions each question carrying 10 marks, so the total marks for each paper will be 100. Questions on recent advances maybe asked in any or all the papers. The examinations will be organised on the basis of 'Grading'or 'Marking system' to evaluate and to certify candidate's level of knowledge, skill and competence at the end of the training. The Clause 14 under the heading "EXAMINATION" shall be substituted in terms of Gazette Notification published on 05.04.2018 and the same is as under:-

Obtaining a minimum of 40% marks in each theory paper and not less than 50% cumulatively in all the four papers for degree examinations and three papers in diploma examination. Obtaining of 50% marks in Practical examination shall be mandatory for passing the examination as a whole in the said degree/diploma examination as the case may be. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately will be mandatory for passing examination as a whole. The examination for MS/MD will be held at the end of 3rd academic year.

3.2.3. Clinical / Practical and viva voce Examination

Clinical examination will be conducted to test the knowledge, skills, attitude and competence of the post graduate students for undertaking independent work as a specialist/Teacher, for which post graduate students will examine a minimum one long case and two short cases.

The Oral examination will be thorough and will aim at assessing the post graduate student's knowledge and competence about the subject, investigative procedures, therapeutic technique and other aspects of the specialty, which form a part of the examination.

Assessment may include Objective Structured Clinical Examination (OSCE) Oral/Viva-voce examination needs to assess knowledge on X-rays, instrumentation, operative procedures. Due weightage should be given to Log Book Records and day to-day observation during the training.

ALLOTMENT OF MARKS

THEORY	MARKS ALLOTMENT	MAXIMUM MARKS	
PAPER-I	10 X 10	100	400
PAPER-II	10 X 10	100	
PAPER-III	10 X 10	100	
PAPER-IV	10 X 10	100	

CLINICALS/ PRACTICALS		200
VIVA VOCE	80	100
PEDAGOGY	20	
TOTAL		**700**

3.2 Examiners:

There will be at least four examiners in each subject. Out of them two will be external examiners and two will be internal examiners. The qualification and teaching experience for appointment as an examiner will be as laid down by the Medical Council of India. No person will be appointed as internal examiner in any subject unless he/she has three years' experience as recognized PG teacher in the concerned subject. For external examiners he/she should have minimum six years of experience as recognized PG teacher in the concerned subject.

3.2.4 Criteria for declaring as pass in Academy Examination:

A candidate should score minimum 40% marks in each theory paper and not less than 50% marks cumulatively in all the papers in postgraduate degree/diploma, to be declared as pass in the examinations. A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical including 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. (No. MCI-23(1)/2014/Med/153433 Dated 28-01-2015) A failed candidate may appear in any sub-sequent examination upon payment of fresh fee to the Registrar of the University.

3.2.5* Declaration of distinction*:

A successful candidate passing the Academy examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate marks are 75 percent and above. Distinction will not be awarded for candidates passing the examination in more thanone attempt.

3.2.6 Number of Candidates per day.

The maximum number of candidates for practical/clinical and viva-voce examination will be as under: MD / MS Programme: Maximum of 8 per day

4. ELIGIBILITY CRITERIA FOR APPEARING FOR EXAMINATIONS 4.1 ATTENDANCE

All the candidates joining the Post Graduate training programme will work as 'Full Time Residents' during the period of training and will attend not less than 80% (Eighty percent) of the imparted training during Academic Term of 6 months including assignments, full time responsibilities and participation in all facets of the education process.

- Every student will attend all teaching programmes 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 programme. Provided further, leave of any kind will not be counted as part of academic term without prejudice to minimum 80% attendance of training period every term.
- Any student who fails to complete the programme in the manner stated above will not be permitted to appear for the Academy Examinations.

4.2. PROGRESS AND CONDUCT

- Every student will attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation, clinics and lectures during each term 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 term of the post graduate programme. Provided further, leave of any kind will not be counted as part of academic term without prejudice to minimum 80% attendance of training period every term.

4.3. RESEARCH ACTIVITIES-PAPER/POSTER/PUBLICATIONS

- A Postgraduate student of a degree programme in broad speciality would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published / accepted for publication/sent for publication during the period of postgraduate studies so as to make him eligible to appear at the postgraduate degree examination. Ref: As MCI Notification dated 09-12-2009, vide No.MCI.18 (1)/2009-Med.55455 and Para No.4.
- It is mandatory for all postgraduate students to undergo training in online programme in "Basic Programme in Biomedical Research" Which should be completed by the end of second semester .Not completing the programme will make them ineligible for appearing for the final academy examinations.(MCI-23(1)/2019-Med./141602 dated 27-08-2019).

4.4 DISSERTATION

Every post graduate student will carry out work on an assigned research project under the guidance of a recognised Post Graduate Teacher, the result of which will

be written and submitted in the form of a dissertation. Dissertation will be submitted at least six months before the Theory and Clinical / Practical examination. The dissertation will be examined by a minimum of three examiners; one internal and two external examiners, who will not be the examiners for Theory and Clinical examination. A candidate will be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the dissertation by the examiners.

4.5 District Residency Programme

All postgraduates students pursuing MD/MS in broad specialties shall undergo a compulsory residential rotation of three months in District Hospital / District Health system as a part of the course curriculum. Such rotation shall take place in the 3rd or 4th or 5th semester of the postgraduates programme. This rotation shall be termed as District residency programme and the postgraduate medical student undergoing training shall be termed as a District Resident.

Satisfactory completion of the District Residency shall be an essential condition before the candidate is allowed to appear in the final examination of the respective postgraduate course. The District Residency Programme Coordinator (DRPC) shall issue certificate of satisfactory completion of DRP and report on the performance of the District Resident on a prescribed format to the concerned Medical College and the Government of State/Union Territory. No. MCI-18(1)/2020-Med./121415.—date 16/09/2020

Procedure for defaulters:

Every department should have a committee containing Head of the department and PG guides 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.

CHAPTER II

GOALS AND GENERAL OBJECTIVES OF POSTGRADUATE MEDICAL EDUCATION PROGRAM

GOALS:

The goal of postgraduate medical education will be to produce a competent specialist and /or a medical teacher:

i. Who will 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 will have mastered most of the competencies, relating to the specialty, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system:
iii. Who will be aware of the contemporary advances and developments in the discipline concerned;
iv. Who will have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology; and
v. Who will 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 will 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 lake 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 programmes, 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 concepts 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 health team engaged in health care, research or training.

STATEMENT OF THE COMPETENCIES

Keeping in view the general objectives of postgraduate training, each disciplines will aim at development of specific competencies, which will be defined and spelt out in clear terms. Each department will produce a statement and bring it to the notice of the trainees in the beginning of the programme 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 will be:

- Theoretical knowledge
- Practical/clinical Skills
- Training in Thesis.
- Attitudes, including communication.
- Training in research methodology.

Source: Medical Council of India, Regulations on Postgraduate Medical Education, 2006 and 2008.

COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR M.D. MICROBIOLOGY

GOALS :

The main goal of the Post Graduate course is to train students of medicine in the field of medical microbiology. The focus of training will be on teaching, diagnostic laboratory services and research activities.

SUBJECT SPECIFIC OBJECTIVES

A post graduate student upon successfully qualifying in the MD (Microbiology) examination should be able to:

1. Demonstrate competence as a clinical microbiologist
2. Interact effectively with the allied departments by rendering services in basic a well as advanced laboratory investigations
3. Demonstrate application of microbiology in a variety of clinical settings to solve diagnostic and therapeutic problems along with preventive measures.
4. Play a pivotal role in hospital infection control, including formulation of antibiotic policy and management of biomedical waste
5. Acquire skills in conducting collaborative research in the field of Microbiology and allied sciences.
6. Conduct clinical/experimental research as would have significant bearing on human health and patient care.
7. Demonstrate effective communication skills required for the practice of clinical microbiology and while teaching undergraduate students.
8. Establish good clinical microbiological services in a hospital and in the community in the fields of bacteriology, virology, parasitology, immunology and mycology.
9. Plan, execute and evaluate teaching assignments in Medical Microbiology.
10. Plan, execute, analyze and present the research work in medical microbiology.
11. To acquire various skills for collaborative research.
12. To participate is various workshops/seminars/journal clubs /demonstration in the allied departments.
13. Uphold the prestige of the discipline amongst the fraternity of doctors.

Skills :

The Post Graduate student at the end of the course should be able to :

1. Follow the Standard precautions during health care activities
2. Apply appropriate methods of sterilization and disinfection procedures
3. Use appropriate Personal Protective equipment during health care activities
4. Disinfect the workplace and follow protocol of containment procedures

5. Follow biomedical waste guidelines for proper disposal of hazardous waste
6. Follow hand hygiene practices appropriately during the health care procedures.
7. Collect and transport appropriate clinical samples under aseptic conditions
8. Perform microscopic examination and interpret
9. Process clinical specimens on media for isolation, purification, identification and quantification of pathogens
10. Perform Antibiotic Sensitivity testing and report
11. Perform routine and specialized microbiological investigations in the field of clinical laboratory medicine
12. Preserve bacterial / Fungal cultures on appropriate media
13. Investigate any outbreaks in the hospital or community
14. Conduct Surveillance of Intensive care unit , Operation theatres
15. Record the quality indicators of Hospital associated infections and report
16. Conduct bacteriological analysis of water, air and food
17. Notify the notifiable diseases to the District health officials through Proper channel

Post-graduate training:
The post graduate training includes the following components for a holistic approach.

1. Laboratory and diagnostic skills in Clinical Microbiology
2. Teaching Skills
3. Research Methodology
4. Communication and attitudinal skills

1. Laboratory and Diagnostic skills in Clinical Microbiology:

The Post Graduate student will have rotational postings in the various sub specialties. (Bacteriology, serology, Mycology, Mycobacteriology, Research lab, PCR room, media room, washing) He / She will be trained in the experiments pertaining to basic, diagnostic and applied Microbiological skills & techniques and constantly supervised & feedback will be provided. Active learning will form the mainstay of the postgraduate training. In addition he / she should also attend a minimum of 20 ward rounds, discuss with the faculty, and maintain a log book for the same. They should be able to render consultative and investigative services in microbiology.

2. Teaching Skills

The Post Graduate student should attend the regular PG teaching programmes (lectures/ seminars/symposia/group discussions and journal clubs)

The Medical Education Department/Unit of the institution will sensitize the postgraduate students in basic concepts of medical education like domains of

learning, teaching skills, teaching - learning methods, learning resource material, evaluation techniques etc. The postgraduate students should attend all undergraduate lectures in the subject of Microbiology and participate actively in the undergraduate teaching program including tutorials, demonstrations and practical's.

3. Research Methodology

The postgraduate students should be able to plan, design and conduct research in Microbiology, as well as collaborate with other departments, analyze data and become familiar with basic biostatistics. They should also be able to write a research paper. All this can be achieved by writing a thesis on a current and relevant topic in Microbiology.

4. Communication and attitudinal skills

The post graduate student should be able to communicate effectively with patients, their relatives, peers, and consultants for better clinical correlation of laboratory findings as well as research. They should work as an effective team member and leader. They should also demonstrate right kind of attitude while handling clinical material and reports.

SUBJECT SPECIFIC COMPETENCIES

A) Cognitive Domain:

At the end of the course, the student should have acquired knowledge in the following
theoretical competencies:

General Microbiology

1. Important historical events and developments in microbiology
2. Basic as well as advanced knowledge in various microscopes and microscopic techniques used in diagnostic microbiology
3. Various bio-safety issues including physical and biological containment, universal containment, personal protective equipment for biological agents
4. Various isolation precautions including standard and transmission based Precautions.
5. In-depth knowledge about various method of Sterilization, disinfection and lyophilization.
6. Nomenclature, classification and morphology of bacteria as well as other Microorganisms.
7. Various types and significance of normal flora of human body in health and disease states.
8. Requirements for growth and nutrition of bacteria along with bacterial metabolism
9. Various types and role of bacterial toxins and bacteriocins
10. Microbiology of air, milk, water as well as hospital environment
11. Various types of host-parasite relationship and their significance

12. Various antimicrobial agents and mechanisms drug resistance
13. Bacterial genetics, bacteriophages and molecular genetics relevant for medical Microbiology.
14. Applications of quality assurance, quality control in microbiology and accreditation of laboratories

Immunology

1. Components of immune system, types of immunity (Innate, acquired, mucosal, humoral and cell mediated immunity) and immune response
2. Describes and identifies uses of various antigens, immunoglobulins (antibodies) and antigen and antibody reactions
3. Complement system and Cytokines
4. Various disorders like hypersensitivity, immunodeficiency and auto-immunity involving immune system
5. MHC complex, Immune tolerance, Transplantation and Tumor immunity
6. Various types, techniques, advances, and applications of vaccines and immunotherapy
7. Measurement of immunological parameters
8. Immunological techniques and their applications in diagnostic microbiology as well as research
9. Mechanisms and significance of immune-potentiation and immune-modulation

Systemic bacteriology

1. Demonstrate knowledge and skills in various techniques for isolation and identification of bacteria.
2. Demonstrate knowledge about epidemiology, morphology, biochemical properties, antigenic nature, pathogenesis, complications, laboratory diagnosis treatment and prevention of major bacterial pathogens of medical importance given below :
    a. Gram positive cocci including *Staphylococcus, Micrococcus, Streptococcus,* anaerobic cocci etc.
    b. Gram negative cocci including *Neisseria, Branhamella, Moraxella* etc.
    c. Gram positive bacilli including *Lactobacillus, Coryneform* bacteria, *Bacillus* and aerobic bacilli, *Actinomyces, Nocardia, Actinobacillus and other actinomycetales, Erysipelothrix, Listeria, Clostridium* and other spore bearing anaerobic bacilli etc.
    d. Gram negative bacilli including *Vibrios, Aeromonas, Plesiomonas Haemophilus, Bordetella, Brucella, Gardnerella, Pseudomonas* and other non-fermenters, *Pasteurella, Francisella, Bacteroides, Fusobacterium,Leptotrichia* and other anaerobic gram negative bacilli etc.
    e. Helicobacter, Campylobacter, Calymmatobacterium, Streptobacillus Spirillum and miscellaneous bacteria.
    f. Enterobacteriaceae
    g. Mycobacteria

h. *Spirochaetes*
i. *Chlamydia*
j. *Mycoplasmatales; Mycoplasma, Ureaplasma, Acholeplasma* and other *Mycoplasmas.*
k. *Rickettsiae, Coxiella, Bartonella* etc.

Mycology

1. Explain general characteristics including morphology, reproduction and classification of fungi
2. Demonstrate knowledge and skills for isolation and identification of fungi
3. Explain tissue reactions to fungi
4. Demonstrate knowledge about epidemiology, morphology, biochemical properties, antigenic nature, pathogenesis, complications, laboratory diagnosis treatment and prevention of major fungal pathogens of medical importance given below
    i. Yeasts and yeast like fungi including *Candida, Cryptococcus, Malassezia, Trichosporon, Geotrichum, Saccharomyces* etc.
    b. *b.* Mycelial fungi including *Aspergillus, Zygomycetes, Pseudallescheria, Fusarium, Piedra,* other dematiaceous hyphomycetes and other hyalohyphomycetes etc.
    c. Dimorphic fungi including *Histoplasma, Blastomyces, Coccidioides, Paracoccidioides, Sporothrix, Penicillium marneffei* etc.
    d. Dermatophytes
    e. Fungi causing Mycetoma, Chromoblatomycosis, Occulomycosis and Otomycosis.
    f. *Pneumocystis jirovecii* infection
    g. g. Rhinosporidium seeberi and *Lacazia loboi* (formerly named *Loboa loboi)*
    h. Pythium insidiosum
    i. Prototheca
5. Able to identify laboratory contaminant fungi
6. Explain Mycetism and mycotoxicosis along with agents involved
7. Demonstrates knowledge about antifungal agents and perform *in vitro* antifungal susceptibility tests.

Virology

1. Demonstrates knowledge about general properties, classification, morphology, virus replication and genetics of viruses.
2. Explain pathogenesis of viral infections
3. Demonstrates knowledge about isolation and identification of viruses
4. 4. Demonstrate knowledge about epidemiology, morphology, genetics, antigenic nature, pathogenesis, complications, laboratory diagnosis, treatment and prevention of major DNA viruses of medical importance including *Pox viruses, Herpes viruses, Adeno viruses, Hepadna virus, Papova viruses* and *Parvo viruses* etc.

5. Demonstrate knowledge about epidemiology, morphology, genetics, antigenic nature, pathogenesis, complications, laboratory diagnosis, treatment and prevention of major RNA viruses of medical importance including *Entero viruses, Toga viruses, Flavi viruses, Orthomyxo viruses, Paramyxo viruses, Reo viruses, Rhabdo viruses, Arena viruses, Bunya viruses, Retro viruses, Filo viruses, Human Immunodeficiency Virus, Arbo viruses, Corona viruses, Calciviruses* etc.
6. Demonstrate knowledge about epidemiology, morphology, genetics, antigenic nature, pathogenesis, complications, laboratory diagnosis, treatment and prevention of major *Hepatitis viruses*
7. Demonstrate knowledge about epidemiology, morphology, genetics, antigenic nature, pathogenesis, complications, laboratory diagnosis, treatment and prevention of unclassified viruses and slow viruses including prions.
8. Demonstrate knowledge about viral vaccines and anti-viral drugs.

Parasitology:

1. Demonstrate knowledge about general characters, classification and methods of identification of parasites.
2. Demonstrate knowledge about epidemiology, morphology, antigenic nature, life cycle, pathogenesis, complications, laboratory diagnosis, treatment and prevention of Protozoan parasites of medical importance including *Entamoeba, Free living amoebae, Giardia, Trichomonas, Leishmania, Trypanosoma, Plasmodium, Toxoplasma, Sarcocystis, Cryptosporidium, Microsporidium, Cyclospora Isospora, Babesia, Balantidium*, etc.
3. Demonstrate knowledge about epidemiology, morphology, antigenic nature, life cycle, pathogenesis, complications, laboratory diagnosis, treatment and prevention of helminthes of medical importance including those belonging to Cestoda (*Diphyllobothrium, Taenia, Echinococcus, Hymenolepis, Dipyllidium, Multiceps* etc.), Trematoda (*Schistosomes, Fasciola, Fasciolopsis, astrodiscoides, Paragonimus, Clonorchis, Opisthorchis* etc.) and Nematoda (*Trichiuris, Trichinella, Strongyloides, Ancylostoma, Necator, Ascaris,Toxocara, Enterobius, Filarial worms, Dracunculus* etc)
4. Demonstrate knowledge about common arthropods and other vectors viz.
5. Mosquito, sand fly, ticks, mite, cyclops, louse, myasis of medical importance.
6. Demonstrate knowledge about anti-parasitic vaccine and drugs.

Applied Microbiology

1. Demonstrate knowledge about epidemiology of infectious diseases
2. Demonstrate knowledge about antimicrobial prophylaxis and therapy
3. Demonstrate knowledge about hospital acquired infections
4. Demonstrate knowledge about management of biomedical waste
5. Effectively investigate an infectious outbreak in hospital and community
6. Demonstrate knowledge about infections of various organs and systems of human body viz. respiratory tract infections, urinary tract infections, central nervous system infections, congenital infections, reproductive tract infections, gastrointestinal infections, hepatitis, pyrexia of unknown

origin, infections of eye, ear and nose, septicaemia, endocarditis, haemorrhagic fever etc.

7. Demonstrate knowledge about opportunistic infections
8. Demonstrate knowledge about various sexually transmitted diseases
9. Demonstrate knowledge about principles, methods of preparation, administration and types of vaccines
10. Effectively use information technology (Computers) in microbiology
11. Demonstrate knowledge and applications of Automation in Microbiology
12. Demonstrate knowledge and applications about molecular techniques in the laboratory diagnosis of infectious diseases
13. Demonstrate knowledge in statistical analysis of microbiological data and research methodology
14. Demonstrate knowledge in animal and human ethics involved in microbiology
15. Demonstrate knowledge in safety in laboratory and Laboratory management

B) Affective Domain:

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.

2. Always adopts ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.

3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and students for effective teaching.

C) Psychomotor domain:

1. Collection/transportation of specimens for microbiological investigations
2. Preparation, examination and interpretation of direct smears from clinical specimens
3. Plating of clinical specimens on media for isolation, purification, identification and quantification purposes.
4. Preparation of stains viz. Gram, Albert's, Ziehl Neelsen (ZN), and special stains for capsule and spore etc.
5. 5. Preparation and pouring of media like Nutrient agar, Blood Agar, Mac-Conkey agar, Sugars, Kligler iron agar/Triple sugar iron agar (TSI), Robertson's cooked meat broth, Lowenstein Jensens medium, Sabouraud's dextrose agar etc.

6. Preparation of reagents-oxidase, Kovac etc.
7. Quality control of media, reagents etc.
8. Operation of autoclave, hot air oven,
9. Care and operation of microscopes.
10. Washing and sterilization of glassware (including plugging and packing)
11. Care, maintenance and use of common laboratory equipments like autoclave, hot air oven, water bath, centrifuge, refrigerators, incubators etc.
12. Aseptic practices in laboratory and safety precautions. Selection of Personal Protective Equipment according to task and donning (gloves, mask, eye protection, gown etc).
13. Sterility tests
14. Identification of bacteria of medical importance up to species level (except anaerobes which could be up to generic level).
15. Techniques of anaerobiosis
16. Tests for Motility: hanging drop, dark ground microscopy for *Spirochaetes*
17. Routine and Special tests - Catalase test, Oxidase test, slide and tube coagulase tests, bile solubility, chick cell agglutination, sheep cell haemolysis, satellitism, CAMP test, and other biochemical tests.
18. Preparation of antibiotic discs; performance of antimicrobial susceptibility testing eg. Kirby-Bauer, Stoke's method, Estimation of MinimalInhibitory/Bactericidal concentrations by tube/plate dilution methods.
19. Tests for ß-lactamase production.
20. Screening of gram negative isolates for ESBL and MBL
21. Screening of *Staphylococci* for Methicillin Resistance.
22. Screening of *Enterococci* for Vancomycin resistance.
23. Testing of disinfectants.
24. Quantitative analysis of urine by pour plate method and semi quantitative analysis by standard loop tests for finding significant bacteriuria
25. Disposal of contaminated materials like cultures
26. Disposal of infectious waste
27. Bacteriological tests for water, air and milk
28. Maintenance and preservation of bacterial cultures

Time frame to acquire knowledge & skills:

Knowledge :

End of 1st year

GENERAL MICROBIOLOGY:

1. History and Pioneers in Microbiology
2. Microscopy
2. Nomenclature and classification of microbes
3. Morphology of bacteria and other micro-organisms
4. Growth and Nutrition of bacteria
5. Bacterial metabolism

6. Sterilization and disinfection
7. Culture media and culture methods
8. Identification of bacteria
9. Bacterial toxins
10. Bacterial antagonism : Bacteriocins
11. Bacterial genetics
12. Gene cloning
13. Antibacterial substances used in the treatment of infections and drug resistance in bacteria
14. Bacterial ecology- Normal flora of human body, Hospital environment, Air, Water and Milk
15. Host-parasite relationship.

IMMUNOLOGY :

1. Innate and acquired immunity
2. Antigens
3. Immunoglobulins
4. Antigen and antibody Reactions
5. Complement
6. System
7. The normal immune system: structure and function
8. Immune Response

MICROBIOLOGY APPLIED TO TROPICAL MEDICINE AND RECENT ADVANCES

1. Normal Microbial flora
2. Epidemiology of infectious diseases
3. Hospital acquired infections & Hospital waste disposal
4. Bacteriology of water milk and air

End of 2nd year

IMMUNOLOGY : Clinical

1. Hypersensitivity
2. Immunodeficiency
3. Auto-immunity
4. Immune tolerance
5. Transplantation immunity
6. Tumour immunity
7. Immunoprophylaxis and immunotherapy
8. Measurement of immunity

SYSTEMATIC BACTERIOLOGY

1. Streptococcus and Lactobacillus
2. Staphylococcus and Micrococcus
3. Pseudomonas
4. The Enterobacteriaceae

5. Mycobacteria
6. Corynebacterium and other Coryneform bacteria
7. Vibrios, Aeromonas,
8. Plesiomonas, Campylobacter & Spirillum
9. Neisseria, Branhamella & Moraxella
10. Haemophilus and Bordetella
11. Bacillus: the aerobic spore- bearing bacilli
12. Clostridium: the spore-bearing anaerobic bacilli
13. Non-sporing anaerobe
14. The Spirochaetes

VIROLOGY:

1. The nature of viruses
2. Classification of viruses
3. Morphology: virus structure
4. Virus replication
5. The genetics of viruses
6. The pathogenicity & lab diagnosis of viruses
7. Epidemiology of viral infections
8. Anti-viral drugs
9. Bacteriophages
10. Herpes viruses
11. Paramyxoviruses
12. Influenza virus
13. Hepatitis viruses
14. Rabies virus
15. Human immunodeficiency viruses

PARASITOLOGY:

1. General Parasitology
2. Protozoan parasites of medical importance:
   Entamoeba,Giardia, Trichomonas,Leishmania, Trypanosoma, Plasmodium

MYCOLOGY

1. The morphology and reproduction in fungi
2. Classification of fungi
3. Dermatophytes
4. Candida
5. Aspergillus

End of 3rd year

SYSTEMATIC BACTERIOLOGY

1. Actinomycetes, Nocardia and Actinobacillus
2. Erysipelothrix and Listeria
3. The Bacteroidaceae: Bacteroides, Fusobacterium and Leptotrichia
4. Chromobacterium, flavobacterium, Acinetobacter and Alkaligenes

5. Pasteurella, Francisella
6. Brucella
7. Chlamydia
8. Rickettsiae
9. Mycoplasmatales: Mycoplasma, Ureaplasma and Acholeplasma
10. Miscellaneous bacteria

VIROLOGY

1. Vaccines
2. Pox viruses
3. Vesicular viruses
4. Toga viruses
5. Bunya viruses
6. Arena viruses
7. Marburg and Ebola viruses
8. Rubella virus
9. Orbi viruses
10. Respiratory diseases: Rhinoviruses, adenoviruses and corona viruses
11. Enteroviruses; Polio, Echo, and Coxsackie viruses
12. Other enteric viruses
13. Slow viruses
14. Oncogenic viruses
15. Teratogenic viruses

PARASITOLOGY

1. Protozoan parasites of medical importance:
Toxoplasma, Sarcocystis, Cryptosporidium, Babesia, Balantidium etc.

2. Helminthology:
All those medically important helminthes belonging to Cestoda, Trematoda and Nematoda.

3. Cestodes: Diphyllobothrium, Taenia, Echinococcus, Hymenolepis, Dipyllidium Multiceps etc.

4.Trematodes: Schistosomes, Fasciola, Gastrodiscoides, Paragonimus, Clonorchis, isthorchis etc.

5. Nematodes: Trichuris, Trichinella, Strongyloides, Ancylostoma, Necator, Ascaris, Toxocara,
Enterobius, Filarial worms, Dracunculus, etc.

6. Ecto-parasites: Common arthropods and other vectors viz., Mosquito,Sand fly, Ticks, Mite, Cyclops

MYCOLOGY

1. Contaminant and opportunistic fungi
2. Fungi causing superficial mycoses
3. Fungi causing subcutaneous mycoses
4. Fungi causing systemic infections
5. Anti-mycotic Agents

MICROBIOLOGY APPLIED TO TROPICAL MEDICINE AND RECENT ADVANCES

1. Infections of various organs and systems of human body
2. Molecular genetics as applicable to microbiology
3. Vaccinology: principle, methods of preparation, administration of vaccines.
4. Bio-terrorism

Skills:

1st year residency-skills list

Area	Sr. no.	Procedure	Observed no.	Assisted no./ practice on dummy	Performed independently no.(under supervision)
General microbiology	1.	Microscopy for unstained preparations/ wet mount	5	5	10
	2	Microscopy for stained preparation	5	5	10
	3	Preparation of direct smears from clinical specimens	5	5	10
	4	Hanging drop preparation	5	5	10
	5	Washing, sterilization and packing of glassware	10 sessions	-	-
	6	Infection control activities environmental sampling	10	10	-
	7	Identification of HAI	5	5	--
	8	Calculation of HAI quality indicators	5	5	--
	9	Bacteriology of water	5	5	-
	10	Bacteriology of air	5	5	-
	11	Methods for preservation of bacteria	10	-	-
	12	Maintenance of stock cultures	10	-	-
Staining	1	Gram staining	10	20	30
	2	Acid fast staining (Ziehl-Neelsen method)	10	20	30
	3	Albert staining	5	10	10

	4	Modified ZN staining for *M. leprae*	5	5	5
	5	Modified ZN staining for *Nocardia*	5	5	5
	6	IQC-staining	5	5	5
Media preparation	1	Preparation of stains	4	4	4
	2	Preparation of reagents	10	10	10
	3	Preparation, plugging, pouring& Quality Control (QC) of culture media	20	20	20
	4	Operation & maintenance of autoclave	10	10	20
Bacteriology	1	Specimen collection for Blood Culture	5	5	5
	2	Inoculation of liquid & solid media	20	20	30
	3	Identification test	20	20	30
	4	Antimicrobial sensitivity testing- modified Kirby-bauer technique	10	20	30
	5	IQC- Antibiotic disc potency	5	5	-
	6	Operation of Automated Blood culture system	5	10	20
	7	Operation of Automated ID & AST	5	10	20
	8	Petroff's concentration technique	10	10	20
	9	AFB culture	5	10	20
Mycology	1	KOH Wet mount	5	10	20
	2	Germ tube test	5	10	20
	3	Slide culture	5	10	20
	4	Negative staining for fungus	5	5	5
	5	LPCB mount	10	10	10
Parasitology	1	Giemsa staining for thick & thin peripheral blood smear	5	-	-
	2	Stool wet mount for R/M	10	20	30
	3	Stool concentration techniques	5	10	5
	4	Modified ZN staining for *C. parvum*	2	2	2
Serology/ Immunology	1	Phlebotomy & separation of serum	10	10	5
	2	Operation & maintenance of ELISA reader & washer	5	10	--

		Performance of serological tests			
	1	Latex agglutination test(RA, ASO)	10	20	30
	2	RPR card test	10	20	30
	3	Tube agglutination test	10	20	30
	4	Gold conjugate Rapid card test	10	20	30

2nd year residency-skill list					
Area	**Sr. no.**	**Procedure**	**Observed no.**	**Assisted no./ practice on dummy**	**Performed independently no. (under supervision)**
General microbiology	1.	Microscopy for unstained preparations/ wet mount	--	--	--
	2	Microscopy for stained preparation	--	--	--
	3	Preparation of direct smears from clinical specimens	--	--	--
	4	Preparation of slit skin smear for lepra bacilli	5	5	5
	5	Hanging drop preparation	--	--	10
	6	Washing, sterilization and packing of glassware	05 sessions	-	-
	7	Infection control activities environmental sampling	--	10	10
	8	Identification of HAI	--	5	5
	9	Calculation of HAI quality indicator	--	5	5
	10	Bacteriology of water	--	5	5
	11	Bacteriology of air	--	5	5
	12	Methods for preservation of bacteria	--	05	10
	13	Maintenance of stock cultures	--	05	10
Staining	1.	Gram staining	--	-	30
	2	Acid fast staining (Ziehl-Neelsen method)	--	-	30
	3	Albert staining	--	-	5
	4	Modified ZN staining for *M. leprae*	--	-	5
	5	Modified ZN staining for	--	-	5

		Nocardia			
	6	IQC-staining	--	-	5
Media preparation	1	Preparation of stains	--	-	5
	2	Preparation of reagents	--	-	15
	3	Preparation, plugging, pouring & Quality Control (QC) of culture media	--	-	50
	4	Operation & maintenance of autoclave	--	-	20
Bacteriology	1	Specimen collection for Blood Culture	--	-	5
	2	Inoculation of liquid & solid media	--	-	30
	3	Identification test	--	-	30
	4	Antimicrobial sensitivity testing-modified Kirby bauer technique	--	-	30
	5	IQC- Antibiotic disc potency	--	-	5
	6	Operation of Automated Blood culture system	--	-	20
	7	Operation of Automated ID & AST	--	-	20
	8	Petroff's concentration technique	--	-	20
	9	AFB culture	--	-	20
Mycology	1	KOH Wet mount	--	-	20
	2	Germ tube test	--	-	20
	3	Slide culture	--	-	20
	4	Negative staining for fungus	--	-	5
	5	LPCB mount	--	-	10
Parasitology	1	Giemsa staining for thick & thin peripheral blood smear	--	10	-
	2	Stool wet mount for R/M	--	-	30
	3	Stool concentration techniques	--	-	5
	4	Modified ZN staining for *C.parvum*	--	-	2
Serology/ Immunology	1	Phlebotomy & separation of serum	--	-	5
	2	Operation & maintenance of ELISA reader & washer	--	-	20

		Performance of serological tests			
	1	Latex agglutination test(RA, ASO, CRP)	--	-	30
	2	RPR card test	--	-	30
	3	Tube agglutination test	--	-	30
	4	Gold conjugate rapid card test	--	-	30

3rd year residency-skill list					
Area	**Sr. no.**	**Procedure**	**Observed no.**	**Assisted no./ practice on dummy**	**Performed independently no. (under supervision)**
General microbiology	1.	Microscopy for unstained preparations/ wet mount	--	-	-
	2	Microscopy for stained preparation	--	-	-
	3	Preparation of slit skin smear for lepra bacilli	--	-	-
	4	Hanging drop preparation	--	-	-
	5	Washing, sterilization and packing of glassware	05 sessions	--	-
	6	Infection control activities environmental sampling	--	--	10
	7	Identification of HAI	--	--	5
	8	Calculation of HAI quality indicators	--	--	5
	9	Bacteriology of water	--	--	5
	10	Bacteriology of air	--	--	5
	11	Antibiotic disc preparation	--	5 lots	2 lots
	12	Handling of laboratory animal	--	--	10
	13	Methods for preservation of bacteria	--	--	10
	14	Maintenance of stock cultures	--	--	10
Staining	1.	Gram staining	--	--	30
	2	Acid fast staining (Ziehl-Neelsen method)	--	--	05
	3	Albert staining	--	--	5
	4	Modified ZN staining for *M. leprae*	--	--	5
	5	Modified ZN staining for	--	--	5

		Nocardia			
	6	IQC-staining	--	--	10
Media preparation	1	Preparation of stains	--	--	50
	2	Preparation of reagents	--	--	20
	3	Preparation, plugging, pouring & Quality Control (QC) of culture media	--	--	5
	4	Operation & maintenance of autoclave	--	--	30
Bacteriology	1	Specimen collection for Blood Culture	--	--	5
	2	Inoculation of liquid & solid media	--	--	30
	3	Identification test	--	--	30
	4	Antimicrobial sensitivity testing-modified Kirby bauer technique	--	--	30
	5	IQC- Antibiotic disc potency	--	--	5
	6	Operation of Automated Blood culture system	--	--	20
	7	Operation of Automated ID & AST	--	--	20
	8	Petroff's concentration technique	--	--	20
	9	AFB culture & sensitivity	--	--	20
Mycology	1	KOH Wet mount	--	--	20
	2	Germ tube test	--	--	20
	3	Slide culture	--	--	20
	4	Negative staining for fungus	--	--	5
	5	LPCB mount	--	--	10
Parasitology	1	Giemsa staining for thick & thin peripheral blood smear	--	--	-
	2	Stool wet mount for R/M	--	--	30
	3	Stool concentration techniques	--	--	5
	4	Modified ZN staining for *C.parvum*	--	--	2
Serology/ Immunology	1	Phlebotomy & separation of serum	--	--	5
	2	Operation & maintenance of ELISA reader & washer	--	--	20

		Performance of serological tests			
	1	Latex agglutination test(RA, ASO, CRP)	--	--	30
	2	RPR card test	--	--	30
	3	Tube agglutination test	--	--	30
	4	Gold conjugate rapid card test	--	--	30

Syllabus

Course contents:

Paper I: General Microbiology

1. History of microbiology
2. Microscopy
3. Bio-safety including universal containment, personal protective equipment for biological agents
4. Physical and biological containment
5. Isolation precautions including standard precautions and transmission based precautions
6. Sterilization, disinfection and lyophilization
7. Morphology of bacteria and other microorganisms
8. Nomenclature and classification of microorganisms
9. Normal flora of human body
10. Growth and nutrition of bacteria
11. Bacterial metabolism
12. Bacterial toxins
13. Bacteriocins
14. Microbiology of hospital environment
15. Microbiology of air, milk and water
16. Host-parasite relationship
17. Antimicrobial agents and mechanisms drug resistance
18. Bacterial genetics and bacteriophages
19. Molecular genetics relevant for medical microbiology
20. Quality assurance and quality control in microbiology
21. Accreditation of laboratories

Immunology

1. Components of immune system
2. Innate and acquired immunity
3. Cells involved in immune response
4. Antigens
5. Immunoglobulins
6. Mucosal immunity
7. Complement

8. Antigen and antibody reactions
9. Hypersensitivity
10. Cell mediated immunity
11. Cytokines
12. Immunodeficiency
13. Auto-immunity
14. Immune tolerance
15. MHC complex
16. Transplantation immunity
17. Tumor immunity
18. Vaccines and immunotherapy
19. Measurement of immunological parameters
20. Immunological techniques
21. Immunopotentiation and immunomodulation

Paper II: Systematic bacteriology

1. Isolation and identification of bacteria
1. Gram positive cocci of medical importance including Staphylococcus, Micrococcus, Streptococcus, anaerobic cocci etc.
2. Gram negative cocci of medical importance including Neisseria, Branhamella, Moraxella etc...
3. Gram positive bacilli of medical importance including Lactobacillus, Coryneform organisms, Bacillus and aerobic bacilli, Actinomyces, Nocardia, Actinobacillus
4. and other actinomycetales, Erysipelothrix, Listeria, Clostridium and other
5. spore bearing anaerobic bacilli etc.
6. Gram negative bacilli of medical importance including Vibrios, Aeromonas, Plesiomonas, aemophilus, Bordetella, Brucella, Gardnerella, Pseudomonas and other non-fermenters, Pasteurella, Francisella, Bacteroides, Fusobacterium, Leptotrichia and other anaerobic gram negative bacilli etc.
7. Helicobacter, Campylobacter, Calymmatobacterium, Streptobacillus, Spirillum and miscellaneous bacteria
8. Enterobacteriaceae
9. Mycobacteria
10. Spirochaetes
11. Chlamydia
12. Mycoplasmatales; Mycoplasma, Ureaplasma, Acholeplasma and other Mycoplasmas.
13. Rickettsiae, Coxiella, Bartonella etc.

Mycology

1. General characteristics and classification of fungi
2. Morphology and reproduction of fungi
3. Isolation and identification of fungi
4. Tissue reactions to fungi

5. Yeasts and yeast like fungi of medical importance including Candida, Cryptococcus, Malassezia, Trichosporon, Geotrichum, Saccharomyces etc.
6. 6.Mycelial fungi of medical importance including Aspergillus, Zygomycetes,Pseudallescheria, Fusarium, Piedra, other dematiaceous hyphomycetes and other hyalohyphomycetes etc.
7. Dimorphic fungi including Histoplasma, Blastomyces, Coccidioides, Paracoccidioides, Sporothrix, Penicillium marneffei etc.
8. Dermatophytes
9. Fungi causing Mycetoma, Chromoblatomycosis, Occulomycosis and Otomycosis.
10. Pythium insidiosum
11. Prototheca
12. Pneumocystis jirovecii infection
13. Rhinosporidium seeberi and Lacazia loboi (Loboa loboi)
14. Laboratory contaminant fungi
15. Mycetism and mycotoxicosis
16. Antifungal agents and in vitro antifungal susceptibility tests.

Paper III: Virology

1. General properties of viruses
2. Classification of viruses
4. Morphology: Virus structure
5. Virus replication
6. Isolation and identification of viruses
7. Pathogenesis of viral infections
8. Genetics of viruses
9. DNA viruses of medical importance including Pox viruses, Herpes viruses, Adeno viruses, Hepadna virus, Papova and Parvo viruses etc.
10. RNA viruses of medical importance including Enteroviruses, Toga viruses, Flavi viruses, Orthomyxo viruses, Paramyxo viruses, Reo viruses, Rhabdo viruses, Arena viruses, Bunya viruses, Retro viruses, Filo viruses, Human immunodeficiency virus, Arbo viruses, Corona viruses, Calci viruses etc.
11. Slow viruses including prions
12. Unclassified viruses
13. Hepatitis viruses
14. Viriods, prions
15. Vaccines and anti-viral drugs.

Parasitology

1. *General characters and classification of parasites.*
2. *Methods of identification of parasites*
3. *Protozoan parasites of medical importance including Entamoeba, Free living amoebae, Giardia, Trichomonas, Leishmania, Trypanosoma, Plasmodium, Toxoplasma, Sarcocystis, Cryptosporidium, Microsporidium, Cyclospora Isospora, Babesia, Balantidium, etc.*

4. *Helminthology of medical importance including those belonging to Cestoda (Diphyllobothrium, Taenia, Echinococcus, Hymenolepis, Dipyllidium, Multiceps etc.), Trematoda (Schistosomes, Fasciola, Fasciolopsis, Gastrodiscoides, Paragonimus, Clonorchis, Opisthorchis etc.) and Nematoda (etc.)*

5. *Entomology: common arthropods and other vectors viz. mosquito, sand fly, ticks, mite, cyclops, louse, myasis.*
6. *Anti-parasitic agents.*

Paper IV: Applied Microbiology

1. Epidemiology of infectious diseases
2. Antimicrobial prophylaxis and therapy
3. Hospital acquired infections
4. Management of biomedical waste
5. Investigation of an infectious outbreak in hospital and community
6. Infections of various organs and systems of human body viz. respiratory tract infections, urinary tract infections, central nervous system infections, congenital infections, reproductive tract infections, gastrointestinal infections, hepatitis, pyrexia of unknown origin, infections of eye, ear and nose, septicaemia, endocarditis, haemorrhagic fever etc.
7. Opportunistic infections
8. Sexually transmitted diseases
9. Vaccinology: principles, methods of preparation, administration of vaccines, types of vaccines
10. Information technology (Computers) in microbiology
11. Automation in Microbiology.
12. Molecular techniques in the laboratory diagnosis of infectious diseases
13. Statistical analysis of microbiological data and research methodology
14. Animal and human ethics involved in microbiological work.
15. Safety in laboratory and Laboratory management

TEACHING AND LEARNING METHODS

The training program are designed to enable the student to acquire a capacity to learn and investigate, to synthesize and integrate a set of facts and develop a faculty to reason. The curricular program and scheduling of postings provides the student with opportunities to achieve the above broad objectives. Much of the learning is to be accomplished by the student himself. Interactive discussions are preferred over didactic sessions. The student must blend as an integral part of the activities of an academic department that usually revolves around three equally important basic functions of teaching, research and service. As mentioned earlier, the emphasis recommended under a residency program is of learning while serving/working.

Post Graduate Training program

Teaching methodology

Based on the available facilities, the Department has prepared a list of post graduate experiments pertaining to basic and applied microbiology. Active learning is the mainstay of post graduate training; there are lectures for post graduates (at least 20 per year), along with seminars, symposia, group-discussions and Journal clubs.

The post graduate students should regularly do the ward rounds of various clinical departments and learn cases of interest for discussion with the clinical faculty.

METHODS OF TRAINING

Duration of degree course:

The training is given under the following headings:

1. Seminars
2. Culture seminars & serological tests
3. Journal clubs
4. Symposia
5. Teaching - undergraduate students
6. Slide seminars
7. Preparation of dissertation under the guidance of a recognized teacher
8. Postings to other institutions
9. Guest lectures
10. Interdepartmental PG symposium – monthly
11. Clinico Pathological Case (CPC) discussion -monthly

Each candidate will be posted to different sections on rotation. They should get acquainted with the basic microbiology for first three months. The next three months they are expected to submit a synopsis on dissertation topic that has been chosen by them.

* Seminars shall be conducted once a month on the theory question topic.
* Culture seminars and discussions are held once a week which helps in systematic way of identification of all the routine bacteria for first few months followed by identification of rare cultures.
* C linical sample seminars are held once a month by processing the clinical samples in identification of the microbe causing that condition.
* Journal clubs are conducted every week-choosing topics from recent journals.
* Symposia are conducted once in every Semester.
* The candidates are encouraged to take part in Clinical meetings and discussions.

Schedule of training:

Each student shall undergo orientation in various sections in microbiology during the first 3 months so as to get familiarized with the basic knowledge in the subject. At the end of the next 3 months, the student shall have to submit the synopsis of the

dissertation.

II term Culture seminars - pure culture of all bacilli.

III term Culture seminars on clinical samples like stool, pus etc., and serological tests- Methodology.

IV term Training in Mycology, Parasitology, UG teaching - theory for smaller batches and practical's and demonstrations.

V term Viral serology/ Interpretation.
UG Teaching - Theory and practical's for smaller batches.
Submission of dissertation.

VI term Slide seminars, Mock examinations.

ENTRUSTABLE PROFESSIONAL ACTIVITIES (EPA)

Title of EPA-1	Perform the RT PCR techniques & interpret the results
Description of EPA	Post graduates should be able to perform RT PCR techniques & interpret the results Knowledge and skills required include the ability to: 1. Principle of PCR 2. Steps of PCR 3. Types of PCR 4. Storage & Transport of specimens 5. Reagent stability 6. Personal protective equipment 7. Three room concept of PCR 8. Labelling of Specimens 9. Extraction of PCR 10. preparation of master mix 11. Loading in the PCR machine 12. Analysis of the graph & CT values 13. Troubleshooting of the events 14. Documentation of the results 15. Communication of the results
Relevant Core Competencies	• Clinician- Knowledge, analysis of clinical data, Practical skills • communicator- Communicate with clinical team. Communicates effectively with patients and family members, when applicable • lifelong learner- Updated information on PCR technique &its modification • Professional - Demonstrates significant awareness of own blind spots, Puts the needs of each patient above his or

	her own interests **<u>Levels of competence</u>**: Level I: Knowledge only; can observe Level II: Can do under strict supervision Level III: Can do under loose supervision Level IV: Can do independently Level V: Has expertise to teach others **All PG expected to reach level IV at the end of 3 years**
Assessment Methods	1 Direct observation 2. Record review of procedure notes 3. Performance metrics (Results interpretation) 4. 360 degree evaluations (e.g., microbiologist , peer group, technician)

Title of EPA-2	**Compose a diagnostic report for samples received for aerobic culture and sensitivity.**
Description of EPA	Knowledge and skills required include the ability to 1. Evaluate the appropriate sample collection methods, transport , storage pertaining to the test requested. 2. Perform the plating of the specimens as per the SOP. 3. Identify and workup of commonly isolated bacteria and corresponding susceptibility testing as per the SOP. 4. Interpret the identification and sensitivity tests of the specimen in line with the appropriate quality control. 5. Correlate the clinical history, microscopic findings, previous culture reports, treatment history. with the culture report. 6. Authorisation of microbiology reports including selective reporting of antimicrobials as per the current CLSI . 7. Prepare a complete report incorporating the identification of the isolate , appropriate AST with a suitable comment . 8. Communicate and document the critical values / notifiable diseases directly with the clinicians as indicated. 9. Recognize when expert consultation is needed and document the consultation in final report.

Relevant Core Competencies	• Clinician : Knowledge , analysis of clinical data. Practical skills : - Demonstrates competence in diagnostic knowledge of Clinical microbiology. - Perform Quality control for relevant tests. • Communicator : Routinely interface with clinical team to advice on antibiotic choice , dose, duration as well as for further investigations where relevant. • Life long learner : Update break point interpretation according to guidance documents. - Recommend novel methods for resistance detection where relevant. - Perform trouble shoots in quality control issues. • Professional : Puts the needs of each patient above his or her own interests.
Assessment Methods	1. Direct Observation 2. Record review of Written reports. 3. Performance metrics (plate reading , interpretation of biochemical tests, correlation of report with the clinical scenario) 4. 360 degree evaluations (e.g., microbiologist , peer group, technician)

Title of EPA-3	**PERFORM AND INTERPRET GRAM STAIN**
Description of EPA	Post graduates are able to perform Gram stain procedure Knowledge and skills required include the ability to : 1. Prepare a smear and fix, using the clinical sample 2. Able to perform the Gram stain procedure as per SOP 3. Perform the Quality control checks 4. Able to focus the smear and interpret 5. Interpretation of the Gram stains 6. Communicate and document the critical values / notifiable diseases directly with the clinicians as indicated.
Relevant Core Competencies	• Clinician- Knowledge, analysis of clinical data, practical skills • Communicator- Communicate with clinical team . Communicates effectively with patients and family members when applicable

	• Lifelong learner- Updated information on Grams stain technique • Professional- Demonstrate significant awareness
Assessment Methods	1. Direct Observation 2. Record review of Written reports. 3. Performance metrics 4. 360 degree evaluations (e.g., microbiologist , peer group, technician)

Title of EPA-4	**To perform the audit of Health care associated infections (HCAI)**
Description of EPA	Post graduates should be able to perform the audit of various health care associated infections Knowledge and skills required include the ability to: 1. Identify different types of HCAI 2. Describe the CDC criteria for different HCAI 3. Analyze the case and interpret whether the criteria to take as HCAI is met 4. Communicate effectively with infection control nurses and the clinicians 5. Capture the denominator data for different HCAIs. 6. Calculate the monthly rates of different HCAIs for which the PG should know the different formulas of HCAI 7. Discuss with the clinician and derive the root cause for the HCAI 8. Institute appropriate preventive and corrective measures 9. Calculate and analyze the trend of HCAIs over a period of time 10. Document and present the audit report
Relevant Core Competencies	• Clinician - Knowledge, analysis of clinical data, Calculation of rates and trends • Communicator - Communicates effectively with the clinicians and infection control nurses • Lifelong learner - Updated information on CDC criteria for Health care associated infections • Professional - Demonstrates significant awareness of own blind spots, Puts the needs of each patient above his or her own interests **<u>Levels of competence</u>**: Level I: Knowledge only; can observe Level II: Can do under strict supervision Level III: Can do under loose supervision Level IV: Can do independently Level V: Has expertise to teach others

	All PGs expected to reach level IV at the end of 3 years
Assessment Methods	1 Direct observation 2. Record review of surveillance forms and validation 3. Performance metrics 4. 360 degree evaluations (e.g., microbiologist , peer group, technician)

Title of EPA-5	**Perform ELISA and interpret the results**
Description of EPA	Postgraduates should be able to perform ELISA the results Knowledge and skills required include the ability to: 1. Properly identify patient specimen label it correctly 2. Communicate with clinical team and consult the medical record to verify pertinent clinical history 3. Should be able to centrifuge and separate serum, should have the skill to pippete serum samples in to the ELISA plate 4. Should have the knowledge of appropriate samples required and sample rejection criteria for ELISA 5.Should have the knowledge of Quality control procedures in ELISA 6. Should be able to perform ELISA and report the results . Should be able to trouble shoot in case of issues during the procedure like like QC failure, Inappropriate results.
Relevant Core Competencies	• Clinician- Knowledge, , Practical skills • communicator- Communicate with clinical team and peer group • lifelong learner- update on procedures which are based on the same principle but advanced like Chemiluminescence, ELFA . • Professional - Demonstrates significant accuracy in reporting and interpreting the results. **Levels of competence**: Level I: Knowledge only; can observe Level II: Can do under strict supervision Level III: Can do under loose supervision Level IV: Can do independently Level V: Has expertise to teach others **All PG expected to reach level IV at the end of 3 years**
Assessment Methods	1. Direct observation of ELISA technique when performed under supervision and when performed individually. 2.Review of logbook 3. 360 degree evaluations (e.g., microbiologist , peer group, technician)

Rotation:

Postings to laboratories/assignments:
The three-year training program for the MD degree is arranged in the form of postings to different assignments/laboratories for specified periods as outlined below. The period of assignments/postings is recommended for 35 months. Posting schedules may be modified depending on needs, feasibility and exigencies. For facilities not available in our institution as well as for additional knowledge and skill, extramural postings may be undertaken.

Suggested schedule of rotation:
Within Department

1. Bacteriology
2. Mycobacteriology
3. Serology/Immunology
4. Mycology
5. Virology
6. Parasitology
7. Media preparation

Other Departments

Students will be posted for allied and applied departments during the period of III, IV and V terms.

Total period not exceeding 3 months. The departments are as follows:

Department	Duration
Neurovirology, NIMHANS	1 month
Clinical Pathology	7 days
Clinical Biochemistry	7 days
Pediatrics	7 days
Surgery	7 days
Genomic lab	7 days
ICU	7days
RNTCP /ICTC	7 days
Dermatology	7 days

The students shall maintain a Log Book for the period of his/her postings to other departments Institutions and get the Certificate from the Departmental Head at the end of postings.

1. OBJECTIVES FOR GENOMIC LAB POSTINGS

At the end of 1 week postings, the student should be able to :

1. Molecular methods in diagnosis of infectious diseases
2. PCR: Principles/Steps involved in PCR/Types of PCR
3. Gel documentation/Spectro photometry

2. OBJECTIVES: SURGERY POSTING FOR POST GRADUATES

At the end of 1 week postings, the student should be able to :

1. Surgical site infections, diagnosis & management
2. Use of antibiotics in surgical practice
3. Asepsis followed during procedures
4. Biomedical waste management
5. Health care associated infections.

3. OBJECTIVES FOR RNTCP:

At the end of 1 week postings, the student should be able to :

1) Enlist the organisms causing respiratory tract infections [bacterial / viral / fungal / parasitic].
2) Describe the clinical manifestations of Pulmonary T.B and Extra pulmonary T.B
3) Describe diagnostic methods to diagnose Pneumonia
4) Describe diagnostic methods to diagnose TB
5) Describe the different treatment regimen of T.B
6) Describe the standard precautions to be taken in examining suspected COVID – 19 patients

OBJECTIVES FOR : NIMHANS – NEUROVIROLOGY

At the end of 1 month postings, the student should be able to :

1. NIMHANS – NEUROVIROLOGY

The Postgraduate students of the department of microbiology will be posted to department of Neurovirology, National institute of Mental Health and Neurosciences, Bangalore for a period of one month during the 2nd year of the MD course. At the end of the postings the student should be able to:

1. Explain the cell culture techniques
2. Explain the principal and working of electron microscopy
3. Explain immunofluorescence and the techniques immunofluorescence to diagnose viral infection
4. Collect appropriate samples for the diagnosis of viral infection
5. Explain the different molecular biological techniques to diagnose viral infections

OBJECTIVES FOR: PATHOLOGY

At the end of 1 week postings, the student should be able to :

1. Perform and interpret slides stained by the following staining techniques:

a) Papinicolaou staining for cell cytology
b) Mucicarmine staining

c) PAS, Leishman and Giemsa stains

2) Should be able to identify tissue changes in bacterial, fungal and parasitic infections in histopathological slides.

3. Interpret the complete haemogram

4. Perform centrifugation to identify the cell type in CSF sample.

5. Interpret cell counts and cell type in CSF in different infections of central nervous system.

6. Exposure to method of collection of sample by FNAC

7. Orientation to IHC for Tumer markers / viruses

OBJECTIVES FOR: BIOCHEMISTRY

At the end of 1 week postings, the student should be able to :

1. Should be able to perform dilution techniques
2. Perform electrophoresis tests and interpret the results
3. Should be able to identify biochemical markers in infectious diseases
4. Knowledge of carbohydrate / protein metabolisms
5. Describe the basic steps in molecular methods of diagnosing microbial infections.

OBJECTIVES FOR: ICU

At the end of 7 days posting in ICU, the student should be able to recognize, collect samples and diagnose infections in:

a) Ventilated patients

b) Patients on urinary catheters

c) Patients on central and /or peripheral venous catheters

d) Develop strategies for prevention of nosocomial cross infections.

OBJECTIVES FOR: PAEDIATRICS

At the end of 7 days posting in Paediatrics , the student should be able to

- To study Paediatrics infections, Antibiotic therapy & their response.
- Neonatal infections in the ICU, prevention of transmission in ICU
- Blood culture & Diagnosis of septicaemia & to study the antibiotic

Seminar at the end of the posting Vertical transmission of infections & Diagnosis

OBJECTIVES FOR: DERMATOLOGY

At the end of 1 week postings, the student should be able to :

- Diagnose various cutaneous infections and Sexually Transmitted Infections
- Identify fungal elements by KOH mount
- Collect appropriate clinical samples – Skin scrapings, nails, hair
- Perform slit skin smear for the diagnosis of leprosy
- Syndromic management of STS's

Practical training

Practical training will be imparted by posting the students in various sub-specialties (sections) as detailed in the intrinsic and extrinsic rotation. The student should be actively involved in day to day working of all the sections. He/she should be trained under the guidance of teachers in all the aspects of Clinical Microbiology and applied aspects of laboratory medicine including collection and transport of specimens, receiving of samples, preparation of requisite reagents, chemicals, media and glassware, processing of specimens, performing required antimicrobial susceptibility testing and reporting on the specimens, interpretation of results, sterilization procedures, bio-safety precautions, infection control practices,
maintenance of equipment's, record keeping and quality control in Microbiology.

Skills & performance:

The student is given graded responsibility to enable learning by apprenticeship. The faculty throughout the year should assess performance of the student in skills. Area of improvement/remarks will be mentioned for the skill and student should be reassessed for the skills which are not acquired. To go to the next level, it should be mandatory for the student to acquire lower level skills satisfactorily,i,e only on satisfactory completion of assisted/performed with assistance skills should the student be permitted to perform the skill independently.

Emergency duty:
The student is posted for managing emergency laboratory services in Microbiology. He/she should deal with all the emergency investigations in Microbiology.

Training in research methodology

Training in research methodology is imparted by planning of a research project by the student under the guidance of a recognized guide to be executed and submitted in the form of a thesis. The thesis is aimed at training the post graduate student in research methods and techniques. It includes the identification of a research question, formulation of a hypothesis, search and review of relevant literature, getting acquainted with recent advances, designing of research study, collection of data, critical analysis of the results and drawing conclusions. The thesis should be completed and submitted by the student six months before appearing for the final university examination.

Communication and attitudinal skills:

Post-graduate student is expected to imbibe professional attributes of honesty, integrity, accountability, honor, humanism and excellence and demonstrate the same in the day by day conduct and dealings with the teacher, peers, the nursing and paramedical staff and most-importantly patients. To ensure that student is able to acquire these attributes, their personal conduct should be keenly observed by the teachers and student should be counselled as and when required. Personal attributes of the student should be regularly assessed by peers, senior, and junior students and Head of the Unit/ In charge.

The various teaching/learning activities employed are

- Collection of specimens, smear examination, culture and sensitivity analysis
- Discussion during routine activities such as during signing out of cases.
- Presentation and work-up of cases including the identification of special stains and ancillary procedures needed.
- Clinico-microbiological conferences, active involvement with hospital infection control committee
- Intradepartmental and interdepartmental conferences related to case discussions.
- Conferences, Seminars, Continuing Medical Education (CME) Programe.
- Journal Club.
- Research Presentation and review of research work.
- A postgraduate student of a postgraduate degree course in broad specialties/super

specialties is required to present one poster presentation, to read one paper at a 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 eligible to appear at the postgraduate degree examination.

- Participation in workshops, conferences and presentation of papers etc.
- Laboratory work.
- Use and maintenance of equipment.
- Maintenance of records. Log books should be maintained to record the work done which shall be checked and assessed periodically by the faculty members imparting the training.
- Postgraduate students shall be required to participate in the teaching and training program of undergraduate students and interns.
- Department should encourage e-learning activities.

During the training program, patient safety is of paramount importance, therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently; for this purpose, provision of skills laboratories in medical colleges is mandatory.

ASSESSMENT

FORMATIVE ASSESSMENT, i.e., assessment during the training

Formative assessment is 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 will 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 practical/clinical examination.

Quarterly assessment during the MD program is e based on:

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.

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I).

SUMMATIVE ASSESSMENT, i.e., assessment at the end of training

The summative examination would be carried out as per the Rules given in the '**Postgraduate medical education regulations, 2000.'**

The post-graduate examinations should be in three parts:

1. Dissertation

Every post graduate student shall carry out work on an assigned research project under the guidance of a recognized Post Graduate Teacher, the result of which shall be written up and submitted in the form of a dissertation. Work for writing the dissertation is aimed at contributing to the development of a spirit of enquiry, besides exposing the post graduate student to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature.

Dissertation shall be submitted at least six months before the Theory and Clinical / Practical examination. The dissertation shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical examination. A post graduate student shall be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the dissertation by the examiners.

2. Theory Examination

The examinations will be organized on the basis of 'Grading' or 'Marking system' to evaluate and to certify post graduate student's level of knowledge, skill and

competence at the end of the training. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination as a whole. The examination for M.D./ MS shall be held at the end of 3rd academic year. An academic term shall mean six month's training period**.**

There will be four theory papers:

Paper I: General Microbiology and Immunology
Paper II: Systematic Bacteriology
Paper III: Virology Parasitology and Mycology
Paper IV: Applied Microbiology and Recent advances*

*Applied topics and recent advances questions can appear in any paper

3. Practical and Oral/viva voce Examination

Practical will be spread over **two** days and include the following components:

- **Bacteriology:**

1. Identification of a pure culture.
2. Isolation and Identification of Bacteria from Clinical Samples

- **Serology:**

Common Serological Tests like ELISA/VDRL/Widal/Brucella Agglutination test etc.

- **Virology:**
    1. Rapid tests for diagnosis of viral infections
    2. ELISA test for diagnosis of viral infections

- **Mycology**
    1. Identification of fungal cultures
    2. Slide culture techniques
    3. Examination of histopathology slides for fungi

- **Parasitology**
    1. Processing and Identification of ova and cysts in stool samples
    2. Microscopic Slides
    4. Examination of histopathology slides for parasites
    5. Spots: 10 spots

Oral/Viva-Voce Examination:

This must include a component of teaching session of not more than 15 minutes duration.

Recommended Reading:

Books (Latest edition)

1. Forbes B, Sahm D, Weissfeld A. *Bailey and Scott's Diagnostic Microbiology*, Mosby, St. Louis.
2. Koneman EW, Allen SD, Janda WM, Schreckenberger PC, Winn WC. *Color Atlas and Textbook of Diagnostic Microbiology*, J.B. Lippincott, Philadelphia.

3. Murray PR, Baron EJ, Pfaller MA, Tenover FC, Yolken RH. *Manual of Clinical Microbiology*, American Society for Microbiology.
4. Garcia LS, Bruckner DA. *Diagnostic Medical Parasitology,* American Society for Microbiology.
5. Wiedbrauk DL, Johnston SLG. *Manual of Clinical Virology*, New York, Raven Press.
6. Bailey and Scott's Diagnostic Microbiology.

Journals

03-05 international Journals and 02 national (all indexed) journals

ANNEXURES

Format of Model Check Lists

1. Model Check-List For Evaluation Of Journal
2. Model Check-List For Evaluation Of Seminar Presentations

MODEL CHECK-LIST FOR EVALUATION OF JOURNALREVIEW PRESENTATIONS

Date:

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

SI. No.	**Items for observation during presentation**	**Not Satisfactory 1 2 3**	**Satisfactory 4 5 6**	**More than satisfactory 7 8 9**	**Remarks**
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 /				
6.	Audio- Visual aids used				
7.	Ability to defend the paper				
8.	Clarity of presentation				
9.	Any other observation				
	TOTAL				

MODEL CHECK-LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Date:

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

SI. No.	Items for observation during presentation	**Not Satisfactory** **1 2 3**	**Satisfactory** **4 5 6**	**More than satisfactory**	**Remarks**
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				
9.	Overall Performance				
10.	Any other observation				

3. MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN WARD / OPD

(To be completed once a month by respective Unit Heads including posting in other departments)

4. Name of the Student: Name of the Unit Head: Date:

SI. No.	Points to be considered:	**Not Satisfactory 1 2 3**	**Satisfactory 4 5 6**	**More than satisfactory 7 8 9**	**Remarks**
1.	Regularity of attendance				
2.	Punctuality				
3.	Interaction with colleagues^and supportive				
4.	Maintenance of case records				
5.	Presentation of cases during rounds				
6.	Investigations work up				
7.	Bedside manners				
8.	Rapport with patients				
9	Over all quality of Ward work				
	TOTAL				

Postgraduate Students Appraisal Form

Name of the 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.	Dissertation / Research work				
7.	Log Book Maintenance				

Publications

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 CONSULTANT
SIGNATURE OF HOD