SUMANDEEP VIDYAPEETH

(Declared as Deemed to be University under Section 3 of the UGC Act 1956)
Accredited by NAAC wifi a CGPA of 3.53 out of four-point scale at 'A' Grade
Category - I deemed to be university under UGC Act - 2018
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CURRICULUM

Doctor of Medicine
(M.D
RADIO DIAGNOSIS / RADIOLOGY

Attested CTC

15/2/2021

Vice-Chancellor
Sumandeep Vidyapeeth
An Institution Deemed to be University
Vill. Piparia, Taluka: Waghodia.
Dist. Vadodara-391 760. (Gujarat)

Dean

Programme outcome : MD

The purpose of MD education is to create specialists who would provide high quality health care and advance the cause of science through research & training. The goal of postgraduate medical education shall be to produce competent specialists and/or Medical teachers.

Programme specific outcome : MD

POS 1. Scholars shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy.

POS 2. Scholars shall have acquired the basic skills in teaching of the medical and paramedical professionals.

POS 3. Practice the specialty concerned ethically and in step with the principles of primary health care.

POS 4. Demonstrate sufficient knowledge of the basic sciences relevant to the concerned specialty**.**

POS 5. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.

COURSE OUTCOME (CO): The objective of the program is to train a student to become a skilled and competent radiologist to conduct and interpret various diagnostic/interventional imaging studies (both conventional and advanced imaging).

1. To organize and conduct research and teaching activities and be well versed with medical ethics and legal aspects of imaging/intervention.

2. Acquire good basic knowledge in the various sub-specialties of radiology such as Neuro-radiology,GI-radiology, Uro-radiology, vascular-radiology, musculoskeletal, Interventional radiology, Emergencyradiology, Pediatric radiology and Mammography.

3. Independently conduct and interpret all routine and special radio logic and imaging investigations.
4. Demonstrate the skills of solving Scientific & clinical problems & decisionmaking.
5. Develop skills as a self:-directed learner recognize cointinuing educational needs, select & use appropriate learningresources.

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

7. Elicit indications, diagnostic features and limitation of applications of ultrasonography, CT and MRI and should be able to describe proper cost-effective algorithm of various imaging techniques in a given problemsetting.

8. Perform various image guided interventional procedures for diagnosis and therapeutic management.

9. Undertake further specialization in any of the above mentioned branches in Radio diagnosis such as gastrointestinal radiology, Uro-radiology, Neuroradiology, vascular radiology, musculoskeletal radiology, Interventional Radiology,etc.

10. Formulate basic research protocols and carry out research in the field of radiology, related clinicalproblems.

11. Work as a Senior Resident / consultant in Radio diagnosis and conduct the teaching programme for undergraduates, postgraduates as well as Para medical and technical personnel.

12. To interact with other specialists and super-specialists so that maximum benefit accrues to thepatient.

13. Organized CME in the specialty utilizing modern methods of teaching andevaluation.

14. Imparting training in both conventional radiology & modern imaging techniques so that the candidate is fully competent to practice, teach and do research in the broad discipline of radiology including ultrasound, Computed tomography and Magnetic ResonanceImaging.

AIM:

- To make medical graduates understand & implement the knowledge regarding the role of various imaging modalities, helpful in the management of different clinicalconditions.
- To train medical graduates as to ensure higher competence in both general and special areas ofRadiology.
- To prepare a candidate for teaching, research and clinical abilities in the field of radiodiagnosis.
- To prepare the candidate to practice Evidence BasedRadiology.

GOALS OF THE TRAINING PROGRAMME

1. Train Radiologists with knowledge and skills required to serve in all categories of health care institutions of the country, both in major cities and in less popularareas.
2. Develop proper attitudes towards delivering of radiological services topatients
3. Develop the ability of decision making as a Radiologist whichis required to manage a department ofradiology.
4. Prepare Radiologists to provide good radiological care whereideal facilities may not beavailable.
5. Create an interest in research in order to improve the specialityof

PROGRAMME OBJECTIVES:

The objective is to train a student to become a skilled and competent radiologist to conduct and interpret various diagnostic / interventional imaging studies / both conventional and be well versed with medical ethics and legal aspects of imaging / intervention.

SPECIFIC LEARNING OBJECTIVES:

A resident on completing his/her MD (Radio diagnosis) should be able to

1. Acquire good basic knowledge in the various sub-specialties of radiology such as Neuro-radiology,GI-radiology, Uro-radiology, vascular-radiology, musculoskeletal, Interventional radiology, Emergencyradiology, Pediatric radiology and Mammography.

2. Independently conduct and interpret all routine and special radio logic and imaging investigations.

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

4. Elicit indications, diagnostic features and limitation of applications of ultrasonography, CT and MRI and should be able to describe proper cost-effective algorithm of various imaging techniques in a given problemsetting.

5. Perform various image guided interventional procedures for diagnosis and therapeutic management.

6. Undertake further specialization in any of the above mentioned branches in Radio diagnosis such as gastrointestinal radiology, Uro-radiology, Neuroradiology, vascular radiology, musculoskeletal radiology, Interventional Radiology,etc.

7. Formulate basic research protocols and carry out research in the field of radiology, related clinicalproblems.

8. Work as a Senior Resident / consultant in Radio diagnosis and conduct the teaching programme for undergraduates, postgraduates as well as Para medical and technical personnel.

9. To interact with other specialists and super-specialists so that maximum benefit accrues to thepatient.

10. Organized CME in the specialty utilizing modern methods of teaching andevaluation.

11. Imparting training in both conventional radiology & modern imaging techniques so that the candidate is fully competent to practice, teach and do research in the broad discipline of radiology including ultrasound, Computed tomography and Magnetic ResonanceImaging.

KNOWLEDGE:

At the end of the course the student shall be able to:

1) Explain the interaction of X-rays with mater to produce animage.
2) Familiarize with the principles of various imaging modalities (e.g. .US/CT/MRI) & their applications inmedicine.
3) Explain the biological hazards of ionizing radiation & protectivemeasures.
4) Explain the normal Anatomy, Physiology of various organs and their deviation from normal) & itsconsequences.
5} Summarize the fundamental aspects of embryology & alteration in development with reference to congenital anomalies.
6) Select appropriate imaging modality for- study of specificcondition.
7) Explain .the role of imaging, pre-operative, intra-operative & post-operativeConditions.
8) Evaluate role of imaging modalities in various therapeutic applications (Interventional Radiology)
9) Update information about recent advances in imagingsciences.
10) Effectively organize & supervise the diagnostic procedures to ensure quality control/assurances

SKILLS:

At the end of the course the student shall be able to:

1) Make use of conventional & other imaging sciences to achieve definitivediagnosis.
2) Analyse & interpret imagingdata.
3) Demonstrate the skills of solving Scientific & clinical problems & decisionmaking.
4) Develop skills as a self:-directed learner recognize cointinuing educational needs, select & use appropriate learningresources.
5) Demonstrate Competence in basic concepts of research methodology & be able to critically analyze relevantliterature.

INTEGRATION:

Knowledge acquired in Radio diagnosis shall help the students to integrate imaging techniques with structure & function of the human body in health & disease.

EVIDENCE BASED PRACTICE:

Sumandeep Vidyapeeth has adopted innovative Teaching learning methodology apart from routine learning activities, In that line radiology also includes different learning activities that persuade a student to make evidence based decisions and to practice evidence based health care, hence during their tenure PG students are to be involved into below mentioned different learning activities:

Evidence based Seminars- All PG seminars will have evidence embedded in the presentation and all references relating to the subject matter will be incorporated. AT the end of the seminar all the references will be listed and the seminar will be assessed by the facilitator.

Evidenced based Journal Clubs- All the post graduate Journal Clubs will be carried out on a prescribed Evidence Based format with emphasis on critical appraisal. A designated teacher/facilitator wills asses every post graduate student for each JC presentation.

Case Conferences with evidence Based decision making:-During the case conference the students will present the diagnostic modality of choice for the given case that are evidence based

Evidence Based Protocol writing - post graduate students are involved in preparing the evidence based imaging protocols with help of their guideteacher.

- To introduce Basic life support (BLS) and Advanced Cardiac Life Support (ACLS) trainingforalltheFirstyearPostgraduateResidentDoctorsfromacademicyear2017-18.
  To introduce New chapter / topic 'Intellectual Property Rights (IPR) foralltheFirstyearPostgraduateResidentDoctorsfromacademicyear2020-2021 of duration of 4hrs (Board of Studies letter no.: SBKS/DEAN/742/2021,dated 05/06/2021 and Vide Notification of Board of Management Resolution Ref no.:SVDU/R/3051-1/2020-21, dated - 29" July 2021)

List of topics :

1. Introduction-ConceptofIntellectualProperty,Historicalviewof Intellectual Property system in India and International Scenario, Evolution of Intellectual Property Laws in India, Legal basis of Intellectual Property Protection, Need for Protecting Intellectual Property, Theories on concept of property - Major IP Laws in India.
2. Types of IPR: Patents, Copyright, Trademark Industrial Designs, TradeSecrets.
3. Patents: Concept of Patent, Criteria of Patentability, Inventions NOT patentable, Process of Obtaining a Patent, Duration of Patents, Rights of Patentee, Limitation of rights, Infringement andEnforcement.
4. Copyrights: Meaning of Copyright, Copyright Vs. Moral rights, Copyrighteligibility,TermofCopyright,RegistrationofCopyright, Infringement andRemedies
5. Trademark: Meaning of Trademark, Criteria for trademark, Procedure for Trademark Registration, Term of protection, Infringement andRemedies.
6. Industrial Designs: Meaning of Industrial Designs, Rights in Industrial Designs: Nature, Acquisition and duration ofrights.
7. Trade Secrets: Meaning of Trade Secrets, Need to protectTrade secrets, Criteria of Protection, Procedure for registration, Infringement.
8. Commercialization of IPR: Traditional IP and Evolving IP, Assignment, Licensing, Cross License, Patent Pool, Negotiations, Defensive Publications, TechnicalDisclosures,

Patent Pooling, Patent Trolling, Brand Management, Brand and Pricing Strategies.

- With reference to the Notification vide no. MC!-18(1)12020-Med.1121415, dated 16.09.2020, related to 'Postgraduate Medical Education (Amendment) Regulations 2020'; all the postgraduate students pursuing MD / MS in broad specialties in Sumandeep Vidyapeeth Deemed to be University, as a part of course curriculum, shall undergo a compulsory Residential rotational posting in the 3rd or 4th or Sth semester of the Postgraduate programme, for a duration of three months, in the District Hospitals / District Health System, is confirmed and approved for execution.

- (Board of Studies letter no.:SBKS/DEAN/1576/2020,dated 0/10/2021 and Vide Notification of Board of Management Resolution : Ref no. SVDU/R/1271-1/2020-21, dated - 30th December 2020)

To consider and approve the tmpte Students admitted in the 2021-22 batch as per the NMC notifications vide letter F.No. NMC23(1)(25)12021/PG/053909 dated 2211212022 and Clarification issued by NMC vide tetter F. N o. N M C/23 (1) (25) 12021 I Med. I 00 1 866 d ated 1 9 I Ot t 2023 Resolution ' with reference to the NMC notifications vide letter F.No. NMC-23(1)(25)t2o21tpcto53g0g dated 2211212022 and Clarification issued by NMC vide letter F.No.NMC/23(1)(25)t2021/Med./001g66 dated 1910112023. the District Residency Program (DRP) shall be implemented for the students admitted in 2021-22 batch onwards. The said notification and clarification from NMC were considered and passed unanimously. Ref :SBKSMIRC/Dean/Outward No.1178/2022-23, Date of Academic council : 22/05/2023

Curriculum for post graduates

All post graduates after enrollment will be exposed to organized evidence searching skills lectures along with teaching of clinical epidemiology, biostatistics and research methodology.

All post graduate Journal Clubs will be carried out on a prescribed Evidence Based format with emphasis on critical appraisal. A designated teacher/facilitator wills asses every post graduate student for each JC presentation.

All PG seminars will have evidence embedded in the presentation and all references relating to the subject matter will be incorporated. AT the end of the seminar all the references will be listed and the seminar will be assessed by the facilitator.

Every post graduate student will be exposed to at least one encounter of role modeling in which a consultant after raising a relevant query will search for its evidence and demonstrate evidence searching methodologies, its importance and utility to the student.

SYLLABUS:

SECTION1

PHYSICS OF DIAGNOSTIC RADIOLOGY

1. Structure of X-Ray tube and electrical circuit of x rayunit.
2. Various types of X-Ray tubes, tube assembly and Tuberating.
3. Production, effects and measurement ofX-Rays.
4. Interaction of X-Rays with matter.
5. ImageIntensification.
6. Conventional Fluoroscopy and IITVSystems.
7. Physics ofDSA.
8. Xeroradiography
9. X –Ray Radiography, Photofluorography.Angiography.
10. Physics of Radiographic Cassettes, Films and IntensifyingScreens
11. Conventional and ComputerisedTomography.
12. Mammography (including DigitalMammography).
13. Image quality and factors controlling the same in conventional and moderntechniques.
14. Dark room techniques including Dark roomDesign.
15. Factor's influencing the radiographic image and assurance of quality controlin radiography.
16. Various artefacts in Radiology andImaging.
17. Effects and control of scatteredradiation.
18. Physics of Collimators, Filters andGrid.
19. Radioactivity-Basicprinciples.
20. Radioactive decay, production of radioisotope imaging, uptake studies, clinical applications.
21. Gamma camera, Radionuclidescanning
22. Radiological aspects and nuclearmedicine.
23. Physics of BoneDensitometry
24. Image processing (Conventional-Manual andautomatic)
25. Image processing(Digital)
26. Digital Radiography and ComputerRadiography.
27. Physics ofUltrasonography.

SECTION 2:

RADIATION PROTECTION

1. Radiations hazards in DiagnosticRadiology.
2. Essential of radiobiology and biological effects ofRadiation.
3. Personal monitoring, Dosimeters, permissible dose, ICRPrecommendation.
4. Departmental protection - National and Intentionalregulations.
5. Radiation Protection for Radiology workers and for the generalpublic.
6. Planning and layout of Diagnostic RadiologyDepartment.
7. Basics of X– ray equipment installation, AERB regulations, radiation acceptancetest.
8. Radiation units andmeasurements.
9. Exposure – dose, doseequivalent,
10. Dosimetric instruments: Ionisation Chamber Systems, GM counters,Scintillation
11. Detectors, TLD and PhotographicDosimetry.
12. QA & controlsystems

SECTION 3:

RESPIRATORY SYSTEM

1. The normal chest: methods of investigation and differentialdiagnosis
2. Themediastinum
3. Thepleura
4. Tumours of thelung
5. Pulmonaryinfections
6. Diseases of the airway: collapse andconsolidation
7. Diffuse lungdisease
8. Miscellaneous chestconditions
9. The paediatricchest

SECTION 4:

CARDIOVASCULAR SYSTEM

1. The normalheart
2. Acquried heart diseases: chestradiograph
3. Acquired heart diseases: non-invasiveimaging
4. Invasive imaging and interventionaltechniques
5. Congenital heartdiseases
6. Arteriography and interventionalangiography
7. Phlebography
8. The lymphaticsystem

SECTION 5:

ABDOMEN AND GASTROINTESTINAL DISEASES

1. The salivary glands, esophagus andpharynx
2. The stomach andduodenum
3. The small bowel and peritonealcavity
4. The largebowel
5. The acuteabdomen
6. The abdomen and majortrauma
7. The biliarytract
8. The liver andspleen
9. Thepancreas
10. The adrenalglands
11. The paediatricabdomen

SECTION 6:

GENITOURINARY TRACT

1. The urgenital tract: anatomy andinvestigations
2. The kidneys andureters
3. The bladder andprostate
4. The urethera and male genitaltract
5. Obstetricultrasound
6. Gynaecologicalimaging

7. **ECTION 7:**

SKELETAL SYSTEM: SOFT TISSUE

1. Congenital skeletal anomalies: skeletal dysplasias and chromosomal disorders
2. Periosteal reaction, bone and joint infections,sarcoid
3. Avascular necrosis; osteochondritis; miscellaneous bonelesions
4. Diseases of thejoint
5. Tumours and tumours like conditions ofbone
6. Disorder of lymphoreticular system and other haemopoieticdisorders
7. Metabolic and endocrine disorders affectingbone
8. Skeletal trauma: generalconsideration
9. Skeletal trauma:regional
10. The softtissue
11. TheBreast

SECTION 8

HEAD AND NECK; CNS; RECENT TECHICL ADVANCES

1. The pharynx and larynx: the neck
2. Thesinuses
3. Teeth andjaws
4. Ultrasound of the eye andorbits
5. Theorbit
6. The petrous temporalbone
7. Theskull
8. Neuroradiology of thespine
9. Angiography inneuroradiology
10. Interventionalneuroradiology
11. Intracraniallesions
12. Recent technicaladvances

POST GRADUATE TEACHING PROGRAM IN THE DEPARTMENT OF RADIOLOGY

- The clinical program of postgraduate students involves six hours of teaching perweek.
- Case presentations on Mondays from 3:00 pm to 4:00pm.
- Evidence based Journal club (1st and 3rd), Film reading session (2nd) and interesting cases of the month (4th) on Tuesdays from 3:00pm to4:00pm.
- Evidence based seminars (1st and 3rd) and resident lectures on radio physics and anatomy on Wednesdays from 3:00pm to 4:00pm.
- Examination every Thursday from 3 to 4pm.
- Weekly PG Common Clinical Meet on Friday from 3 pm to 4pm.
- Lectures by faculty every Saturday from 10:00am to11:00am.

Every student is encouraged for 2 paper/ poster presentation in specialty conference. Simultaneously it is mandatory for every student (at least one) to either publish or submit article for publication in peer reviewed indexed journal.

Internal assessment of post graduate students

Internal assessment of post graduate students is carried out regularly as below-

Quarterly assessment is done on the basis of following points and every student's performance is graded as satisfactory or non-satisfactory on pre-structured format (annex. Attatched).

- Discipline andbearing
- Conduct with colleagues, patients andrelatives
- Progress on synopsis/dissertations
- Patient examinationprocedures
- Seminars,
- Journal club,
- Casepresentation

Periodic assessment is done by 6 monthly one theory and one practical examinations and its format is similar to university examinations. It is taken for second year and third year residents.

Preliminary examination is done theory and practical examinations and its format is similar to university examinations.

Attested

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REFERENCE BOOKS

No	Title Name	Authors Name
1	Ultrasonography in obstetrics and Gynecologty	Callen 2 ND
2	Aids to radiological Diffrential Diagnosis	Stephen Chapman and Richard Nakielny
3	Atlas of Abdominal Ultrasonography in Children	Gary F. Gates
4	Magnetic Resonance Imaging	Robert Sigal
5	Diagnostic Radiology Ananglo- American Textbook Of Imaging	R G Grainger & D. J. Allison
6	Transvaginal sonography 2ND	CHAPMAN & HALL
7	Essentials of Caffey's Pediatric X-Ray Diagbosis	Frederic N. Silverman, Jerald P Kuhan
8	Sonography of The Ingfant Hip and Atlas	Reinhard Graf and Peter Schuler tranlated by TerryTelger
9	Contrast Radiology	Schering AG Berlin/Bergkamen
10	Transvaginal Ultrasound	David A Nyberg Lyndon M Hill
11	Atlas of Gray Scale Ultrasonography Kenneth J.W.Taylor	Churchill Livingstone
12	Diagnostic Radiology Ananglo- American Textbook Of Imaging2	R. C. Grainger & D. J. Allison
13	Diagnostic Imaging an Algorithmic Approach	Ronald L Eisenberg
14	Computerized Axial Tomography	J Gambarelli G Guerinel L Chevrot M Mattei
15	Essentials of Nuclear Medicine Imaging 2 ND	Fred A. Mettler, Milton J. Guiberteau
16	Whole Body Computerized Tomography O. H. Wegenar	Schering West Germany
17	Magnetic Resonance Imaging and Spectroscopy In Medicine Concepts and Techniques	P Raghunathan
18	The Radiology of Skeletal Disorders Exercises in Diagnosis 3 RDEdition	Ronald O. Murray Harold G Jacobson, Debbis J.Stoker
19	Text Book OF Radiology and Medical imaging Vol. 2	David Sutton
20	The Radiology of Skeletal Disorders Exercises in Diagnosis 2 RDEdition	Ronald O. Murray Harold G Jacobson, Debbis J.Stoker
21	The Radiology of Skeletal Disorders Exercises in Diagnosis 1 RDEdition	Ronald O. Murray Harold G Jacobson, Debbis J.Stoker

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22	Text Book Abdominal Ultrasound	Barry B Goldberg Editor
23	Ultrasonography in obstetrics and Gynecologty	Sanders James
24	Manual of Cranial Computerized Tomography	K. York Chynn , Nathaniel Finby
25	Ultrasonography in obstetrics and Gynecologty	Sanders James
26	Cranial MRI an CT Third Edition Internation Edition	Lee, Rao, Zimmerman
27	CT AND MRI OF HEAD AND NECK TUMORS	LENZ MARTIN
28	MRI OF THE SPINE A GUIDE TO CLINICAL APPLICATIONS	KAISER C. MARC
29	MRI THE BASICS	HASHEMI, H. RAY
30	CT AND MYELOGRAPHY OF T HE SPINE AND CORD	PETTERSSON
31	AIDS TO RADIOLOGICAL DIFFERENTIAL DIAGNOSIS	Stephen Chapman and Richard Nakielny
32	AIDS TO RADIOLOGICAL DIFFERENTIAL DIAGNOSIS	Stephen Chapman and Richard Nakielny
33	DIAGNOSTIC ULTRASOUND	RUMACK, M. CAROL
34	TEXTBOOK OF RADIOLOGY AND IMAGING	ED BY SUTTON DAVID
35	TEXTBOOK OF RADIOLOGY AND IMAGING	ED BY SUTTON DAVID
36	CLARKS POSITIONING IN RADIOGRAPHY	ED BY SWALLOW, R.A.
37	A SYNOPSIS RADIOLOGY AND IMAGING	SIDHVA J. SORAB
38	A SYNOPSIS RADIOLOGY AND IMAGING	SIDHVA J. SORAB
39	ARTHOSONOGRAPHY	SATTLER, H.
40	ARTHOSONOGRAPHY	SATTLER, H.
41	RADIOGRAPHIC IMAGING	CHESNEY NOREEN. D.
42	MAGNETIC RESONANCE IMAGING	SIGAL ROBERT
43	CRANIOFACIAL DEFORMITIES: ATLAS OF THREE-DIMENSIONAL RECONSTRUCTION FROM COMPUTED TOMOGRAPHY	DAVID, D. J.
44	AIDS TO RADIOLOGICAL DIFFERENTIAL DIAGNOSIS	Stephen Chapman and Richard Nakielny
45	POCKET RADIOLOGIST BRAIN TOP 100 DIAGNOSES	OSBORN G. ANNE
46	INTERVENTIONAL RADIOLOGY	Benjamin Felson
47	CLINICAL DOPPLER ULTRASOUND	ALLAN, PAUL
48	DIAGNOSTIC ULTRASOUND OF THE LOWER ABDOMEN	TRENTA A. AT...AL
49	DIAGNOSTIC RADIOLOGY PAEDIATRIC IMAGING	Manorama Berry

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50	CLARK"S POSITIONING IN RADIOGRAPHY	WHITLEY,A STEWART
51	CLARK"S POSITIONING IN RADIOGRAPHY	WHITLEY,A STEWART
52	DIAGNOSTIC IMAGING	ARMSTRONG,PETER ET ALL
53	CHESNEYS " RADIOGRAPHIC IMAGING	BALL,JOHN
54	DIFFERENTIAL DIAGNOSIS IN ABDOMINAL ULTRASOUNDS	BISSET,R.A.L.
55	FUNDAMANTALS OF BODY CT	WEBB,W RICHARD
56	Basic Concepts in Diagnosis Imaging	B. Damascelli
57	Anatomy Regional and Applied	R J Last 6 th Edition
58	Diagnostic Ultrasound Text & Cases	Dennis A Sartui 2 ND Edition
59	Frontiers in European Radiology 6	Springer - Verlag
60	MEAUSURMENTS IN PEDIATRIC RADIOLOGY	PATTERSSON HOLGER
61	Viva in Anatomy 4 th Edition	Yadav
62	Gamut Of Radiology	Elias Theros
63	Vascular Imaging and Doppler Ultrasound Course	Georg Berdejo
64	Radiology Review Manual 2 nd	Wolfgang Dahnert
65	Atlas of Topographical and Applied Human Anatomy	Eduard Pernkopf
66	Human Embryology	A K Datta
67	Ultrasound Imaging Liver Spleen Pancreas	David O. Cosgrove, V. Ralph Mc Cready
68	Handbook of Ultrasound	G. S. Garkal
69	Abdominal Ultasonography 2 ND	Barry B Goldberg Editor
70	Clark's Positioning In Radiography 10 TH Edition	Heinemann
71	A Short Textbook of Medicine 8 th	J C Houstion, C L Joiner, J R Trounce
72	Radiology Review Manual	Wolfgang Dahnert
73	INTERVENTIONAL RADIOLOGY OF THE GALLBLADDER	MCNULTY J.G.
74	EXERCISES IN DIAGNOSTIC ULTRASONONGRAPHY OF THEABDOMEN	WEILL F.S.
75	EXERCISES IN DIAGNOSTIC ULTRASONONGRAPHY OF THEABDOMEN	WEILL F.S.
76	EXERCISES IN DIAGNOSTIC ULTRASONONGRAPHY OF THEABDOMEN	WEILL F.S.
77	EXERCISES IN DIAGNOSTIC ULTRASONONGRAPHY OF THEABDOMEN	WEILL F.S.
78	A TEXT AND ATALS OF LIVER ULTRASOUNG	BISMUTH HENRI
79	DIAGNOSTIC ULTRASOUND OF THE LOWER ABDOMEN	TRENTA A. AT...AL

80	NEUROACTIVATION AND NEUROIMAGING WITHSPET	GEORGE ,M.S.
81	COMPREHENSIVE MANUALS IN RADIOLOGY ARTHROGRAPHY	DALINKA K. MURRAY
82	RADIOLOGY OF THE SPLEEN	DACHMAN H. ABRAHAM
83	RADIOLOGY OF THE SPLEEN	DACHMAN H. ABRAHAM
84	RADIOLOGY OF OCCUPATIONAL CHEST DISEASE	ED BY SOLOMON A.
85	DEVELOPMENT OF THE VISUAL SYSTEM	Lam And Shatz
86	MRI PHYSICS FOR PHYSICIANS	HOROWITZ L. ALFRED
87	HANDBOOK OF MEDICAL RADIOGRAPHY	RAMAMOHAN C.
88	RADIOLOGICAL PROCEDURES A GUIDELINE	LAKHKAR,BHUSHAN N.
89	ENDOCRINE IMAGING TEXTBOOK AND ATLAS	ED BY HIGGINS C.B.
90	TEXTBOOK OF DENTAL AND MAXILLOFACIAL RADIOLOGY	KARJODKAR R. FRENY
91	ESSENTIALS OF RADIOLOGY AND IMAGING	BHADURY SMARJIT
92	RADIOIMMUNOASSARY OF GUT REGULATORYPEPTIDES	Stephen Bloom
93	PRINCIPLES OF STATISTICAL RADIOPHYSICS-3	RYTOV, S.M.
94	INSTRUCTORS MANUAL RADIOGRAPHIC POSITIONING AND RELATEDANATOMY	BONTRAGER L. KENNETH
95	COMPUTED TOMOGRAPHY GASTROEINTESTINAL TRACT INCLUDING THE PERIONEAL CAVITY ANDMESENTERY	ED BY MEYERS A. MORTON
96	MCQS IN RADIOLOGY WITH EXPLANTORY ANSWERS	BHARGAVA K. SATISH
97	MRI PHYSICS FOR PHYSICIANS	HOROWITZ L. ALFRED
98	MCQS IN RADIODIAGNOSIS &RADIOTHERAPY	DAGA V. BIPIN
99	PRACTICAL OF REHABILITATION IN ONCOLOGY	RANGWALA T. RUBAB
100	IMAGING OF VERTEBRAL TRAUMA	DAFFNER H. RICHARD
101	POCKET RADIOLOGIST INTERVENTIONAL TOP 100PROCEDURES	ROGERS PETER
102	DIAGNOSTIC ULTRASOUND IN GASTROENTEROLOGY	BOLONDI L.
103	A-Z OF EMERGENCY RADIOLOGY	HOLMES, J. ERSKINE
104	REGIONAL RADIOGRAPHY AND RADIOLOGICALANATOMY	BHADURY SMARJIT
105	FUNCTIONAL COMPUTED TOMOGRAPHY	Kenneth Miles

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106	AN ATLAS OF RECTAL ENDOSONOGRAPHY	BEYNON J. FEIFEL G.
107	TRAUMA OF THE SPINE CT AND MRI	WIMMER B., WENZ, W.
108	RADIOLOGY OF THE SMALL INTESTINE	BRET PIERRE, CUCHE CHRISTINE
109	THERAPEUTIC RADIOLOGY	ED BY MANSFIELD M. CARL
110	RADIOLOGICAL AND IMAGING SECRETS	GUPTA, L.C.
111	RADIOLOGICAL AND IMAGING SECRETS	GUPTA, L.C.
112	X RAY EQUIPMENT FOR STUDENT RADIOGRAPHERS	CHESNEY NOREEN. D.
113	ESSENTIALS OF RADIOLOGY AND IMAGING	BHADURY SMARJIT
114	DIAGNOSTIC ULTRASOUND OF THE LOWER ABDOMEN	TRENTA A.
115	URINARY TRACT BLEEDING DIAGNOSIS AND CONTROL BY MEDICAL, RADIOLOGIC, AND SRUGEICAL TECHNIQUES	ED BY BERN. M. MURRAY
116	DIAGNOSTIC RADIOLOGY MUSCULOSKELETAL AND BREASTIMAGING	Manorama Berry
117	Vivalnanatomy 4 th Edition Abd & Head & Neck & Central Nervous system	A Yadav
118	Cunningham's Manual of Practical Anatomy Vol Three Head & Neck and Brain	G. J. Romanes
119	An Imaging Atals of Human Anatomy	Jamie Weir, Peter H. Abrahams
120	The Prostate	John P Blandy
121	Review of Radiology Phisics	Walter Huda, Richard Slone
122	Pocket Radiologist Head & Neck	Harhsb erger
123	Transvaginal Ultrasound 2ND	Melvin G Dodson
124	Diagnosik Radiology and Imaging Vol 1	Kakarla Subbarao, Samir Banerjee
125	Diagnosik Radiology and Imaging Vol 2	Kakarla Subbarao, Samir Banerjee
126	Diagnosik Radiology and Imaging Vol 3	Kakarla Subbarao, Samir Banerjee
127	The Breast ClinicalRadiodiagnosi	Jean Louis, Lamarque
128	Atlas of Computer Tomography THE Eye & Orbit	Dr. S. B. Patel
129	Atlas OF Pediatic Gustrointestinal Radiology & Abdomino -PelvicTumors	Dr. S. B. Patel

Attested CTC

Vice-Chancellor
Sumandeep Vidyapeeth
An Institution Deemed to be University

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JOURNALS RECOMMENDED:

1. American journal of Roentgenology(AJR).
2. British Journal ofRadiology.
3. Seminars inRoentgenology
4. Radiological Clinics of NorthAmerica
5. American Journal ofNeuroradiology.
6. Indian journal of Radiology andImaging.
7. ClinicalRadiology.
8. Radiographics.
9. Radiology.
10. PediatricRadiology.
11. Pediatric RadiologyJournal
12. ActaRadiologica
13. Journal of ClinicalUltrasound
14. Ultrasound in Medicine andBiology
15. UltrasoundInternational
16. Ultrasound in Obstetrics andGynecology
17. Neuroradiology
18. Skeletal Radiology (The Journal of SkeletalRadiology).
19. ClinicalImaging.
20. Seminars in ULTRA SOUND, CT and MR.

Scheme of Examination (MD Course)

Degree: **M.D.(Radio-diagnosis)**

University: **Sumandeep Vidyapeeth, Piparia**

Dissertation: Radiodiagnosis based Topic will be assigned for dissertation work. After getting approval from the institutional ethical committee, the student is expected to complete and submit it to the University for Assessment Purpose SIX months before the expected date of UniversityExamination.

Attested CTC

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Vill. Piparia, Waghodia,

Sumandeep Vidyapeeth
Deemed to be University

Theory Examination: (400 Marks)

Paper number	Topics	Marks	Time
I	**Radiophysics and Radioanatomy- [Conventional radiophysics, computed radiography, digital radiography, Ultrasonography, Doppler,Computed tomography, MRI, Radioanatomy]**	100	3 Hours
II	**Radio-diagnosis I – [Respiratory system, CVS, GIT, GUT, Musculoskeletal, Central nervous system]**	100	3 Hours
III	**Radio-diagnosis II – [Respiratory system, CVS, GIT, GUT, Musculoskeletal, Central nervous system]**	100	3 Hours
IV	**Recent advances in Radiodiagnosis**	100	3 Hours

Note: The distribution of topics in each paper is arbitrary. There may be overlapping of relevant topics in question papers

Each Paper shall have 5 Questions; all compulsory; no options.

Question-1: Long Question (1 or 2 parts)	20 marks
Question-2: Long Question (1 or 2 parts)	20 marks
Question-3: Long Question (1 or 2 parts)	20 marks
Question-4: Long Question (1 or 2 parts)	20 marks
Question-5: Short notes -–(4)	20 marks

Practical Examination: (450 Marks + 150 marks oral including table work) = 600 marks
Duration: Minimum 2 days

Exercise number	Description	Marks	Time	Assessment
1	long case	200	1 hour	All Four examiners
2	Short case (2), [75 marks x 2]	150	30 minutes for each case	Case- I- Pair-I Case-II pair II
3	Spots (2) [50 marks x 2]	050 050	30 minutes each	Pair-I Pair-II
4	Radiophysics Viva	50	15 minutes	All Four examiners
5	Grand Table Viva	100	30 minutes	All Four examiners

Passing standards: Theory and Practical 50 % each separatel

Scheme of Examination: (Diploma in Radiology Course)
Degree: **Diploma in Radiodiagnosis (D.M.R.D.)**

University: **Sumandeep Vidyapeeth, Piparia**

Theory Examination: (300 Marks)

Paper number	Topics	Marks	Time
I	**Radiophysics and Radioanatomy- [Conventional radiophysics, computed radiography, digital radiography, Ultrasonography, Doppler, Computed tomography, MRI, Radioanatomy andrecent advances]**	100	3 Hours
II	**Radio-diagnosis I – [Respiratory system, CVS, GIT, GUT, Musculoskeletal, Central nervous system]**	100	3 Hours
III	**Radio-diagnosis II – [Respiratory system, CVS, GIT, GUT, Musculoskeletal, Central nervous system]**	100	3 Hours

Note: The distribution of topics in each paper is arbitrary. There may be overlapping of relevant topics in question papers

Each Paper shall have 5 Questions; all compulsory; no options.

Question-1: Long Question (1 or 2 parts)	20 marks
Question-2: Long Question (1 or 2 parts)	20 marks
Question-3: Long Question (1 or 2 parts)	20 marks
Question-4: Short Notes—(4)	20 marks
Question-5: Short notes -–(4)	20 marks

Practical Examination: (300 Marks + 100 marks Viva voce) = 400 marks
Duration: Minimum 2 days

Exercise number	Description	Marks	Time	Assessment
1	Long case	150	1 hour	All four examiners
2	Short case [50 marks x 2]	50 50	30 minutes each	Pair- I Pair-II
3	Spots [25 marks x 2]	25 25	30 minutes each	Pair-I Pair-II
4	Viva-voce [Radiophysics and table viva]	100	30 minutes	All Four examiners

Passing standards: Theory and Practical 50 % each separately

Attested CTC

15/2/2021

Vice-Chancellor
Sumandeep Vidyapeeth
An Institution Deemed to be University
Vill. Piparia, Taluka: Waghodia.
Dist. Vadodara-391 760. (Gujarat)