

Faculty of Medicine

Bachelor of Science in Medical Radiology and Imaging Technology (B.Sc. MRIT)

Semester –I

INTRODUCTION TO HEALTHCARE DELIVERY SYSTEMS IN INDIA

Course Title		Introduction to healthcare delivery systems in India	
Course Code	MRIT01		
Course Credit	Lecture: 3		
	Practical: 4		
	Clinical Training: 0		
	Total: 5		
Course Objectives			
The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.			
#	Detailed Syllabus		
Section I			Sessions
1	Introduction to healthcare delivery system <ul style="list-style-type: none"> a. Healthcare delivery system in India at primary, secondary and tertiary care b. Community participation in healthcare delivery system c. Health system in developed countries. d. Private Sector e. National Health Mission f. National Health Policy g. Issues in Health Care Delivery System in India 		16
2	National Health Programme Background objectives, action plan, targets, operations, achievements and constraints in various National Health Programme.		10
3	Introduction to AYUSH system of medicine <ul style="list-style-type: none"> a. Introduction to Ayurveda. b. Yoga and Naturopathy c. Unani d. Siddha e. Homeopathy f. Need for integration of various system of medicine 		14
Section II			
4	Health Scenario of India- Past, Present and Future		5
5	Demography & Vital Statistics. <ul style="list-style-type: none"> a. Demography – its concept b. Vital events of life & its impact on demography c. Significance and recording of vital statistics d. Census & its impact on health policy 		10

6	<p>Epidemiology</p> <p>a. Principles of Epidemiology b. Natural History of disease c. Methods of Epidemiological studies d. Epidemiology of communicable & non-communicable diseases, disease transmission, host defence immunizing agents, cold chain, immunization, disease monitoring and surveillance.</p>	25
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Instruction Method

1. Teaching and training sessions will be carried out through active learning. Active participation and contribution in group discussion and seminars are mandatory for students
2. Lectures to be conducted with the help of black board and/or audio-visual aids that includes multi-media projector, OHP, etc.
3. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval
4. The course includes a laboratory where the students have an opportunity to build and appreciation for the concepts being taught in lectures.

Text Books

K Park 2005, "The Text book of Preventive Medicine" 18th edition

BASIC COMPUTERS AND INFORMATION SCIENCE

Course Title	Basic Computers and information Science	
Course Code	MRIT02	
Course Credit	Lecture: 1	
	Practical: 2	
	Clinical Training: 0	
	Total: 2	
Course Objectives		
The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation.		
#	Detailed Syllabus	Sessions
Section I		
1	Introduction to computer: <ul style="list-style-type: none"> ▪ Introduction, characteristics of computer, ▪ block diagram of computer, ▪ generations of computer, ▪ Computer languages. 	2
2	Input output devices: Input devices <ul style="list-style-type: none"> ▪ keyboard, ▪ point and draw devices, ▪ data scanning devices, ▪ digitizer, ▪ electronic card reader, ▪ voice recognition devices, ▪ vision-input devices, output devices <ul style="list-style-type: none"> ▪ monitors, pointers, ▪ plotters, ▪ screen image projector, ▪ Voice response systems. 	2
3	Processor and memory: <ul style="list-style-type: none"> ▪ The Central Processing Unit (CPU), ▪ main memory 	1
4	Storage Devices: <ul style="list-style-type: none"> ▪ Sequential and direct access devices, ▪ magnetic tape, ▪ magnetic disk, ▪ optical disk, 	1

	<ul style="list-style-type: none"> ▪ Mass storage devices. 	
5	<p>Introduction of Operating System:</p> <ul style="list-style-type: none"> ▪ introduction, ▪ Operating system concepts, ▪ Types of operating system. 	2
6	<p>Computer networks:</p> <ul style="list-style-type: none"> ▪ introduction, ▪ types of network (LAN, MAN, WAN, Internet, Intranet), ▪ network topologies (star, ring, bus, mesh, tree, hybrid), ▪ Components of network. 	2
7	<p>Introduction of windows:</p> <ul style="list-style-type: none"> ▪ History, features, ▪ desktop, ▪ taskbar, ▪ icons on the desktop, ▪ operation with folder, ▪ creating shortcuts, ▪ Operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.) 	5
Section II		
8	<p>Introduction to MS-Word:</p> <ul style="list-style-type: none"> ▪ introduction, ▪ components of a word window, ▪ creating, opening and inserting files, ▪ editing a document file, ▪ page setting and formatting the text, ▪ saving the document, ▪ Spell checking, ▪ printing the document file, ▪ creating and editing of table, ▪ Mail merge. 	4
9	<p>Introduction to Excel:</p> <ul style="list-style-type: none"> ▪ introduction, about worksheet, ▪ entering information, ▪ saving workbooks and formatting, ▪ printing the worksheet, ▪ creating graphs 	3
10	<p>Introduction to power-point:</p> <ul style="list-style-type: none"> ▪ introduction, ▪ creating and manipulating presentation, ▪ views, ▪ formatting and enhancing text, 	3

	<ul style="list-style-type: none"> ▪ Slide with graphs. 	
11	<p>Internet and its Applications:</p> <ul style="list-style-type: none"> ▪ definition, ▪ brief history, ▪ basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)) ▪ www browsers, ▪ Use of the internet. ▪ Install different software ▪ Data entry 	4
12	Application of Computers in clinical settings	1
Instruction Method		
<ol style="list-style-type: none"> 1. Teaching and training sessions will be carried out through active learning. Active participation and contribution in group discussion and seminars are mandatory for students 2. Lectures to be conducted with the help of black board and/or audio-visual aids that includes multi-media projector, OHP, etc. 3. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval 4. The course includes a laboratory where the students have an opportunity to build and appreciation for the concepts being taught in lectures. 		
Text Books		
<ol style="list-style-type: none"> 1. Basic computer application: Parvez Faruki, Manoj Parmar and Nandu Fatak; Mahajan Publishing house 2. P.C. Software for Windows 98 made simple: Taxali R.K.; Tata mcgraw-Hill publishers 3. Computer fundamentals: Pradeep K. Sinha and Priti Sinha; BPB publication 		

COMMUNICATION AND SOFT SKILLS

Course Title	Communication and soft skills	
Course Code	MRIT03	
Course Credit	Lecture: 1	
	Practical: 2	
	Clinical Training: 0	
	Total: 2	
Course Objectives		
<ol style="list-style-type: none"> To learn the effective communication skills, and use communication as a major tool in the clinical practice. To know the technologist and patient relationship. 		
#	Detailed Syllabus	Sessions
SECTION I		
1.	Basic Language Skills: Grammar and Usage.	4
2.	Business Communication Skills. With focus on speaking – <ul style="list-style-type: none"> ▪ Conversations, ▪ discussions, ▪ dialogues, ▪ short presentations, ▪ pronunciation 	6
3.	Teaching the different methods of writing like <ul style="list-style-type: none"> ▪ letters, ▪ E-mails, ▪ report, ▪ case study, ▪ Collecting the patient data etc. ▪ Basic compositions, ▪ journals, ▪ with a focus on paragraph form and organization. 	10
SECTION II		
4.	Basic concepts & principles of good communication	4
5.	Special characteristics of health communication	4
6.	Types & process of communication	6
7.	Barriers of communication & how to overcome	6
Instruction Method		
<ol style="list-style-type: none"> Teaching and training sessions will be carried out through active learning. Active participation and contribution in group discussion and seminars are mandatory for students Lectures to be conducted with the help of black board and/or audio-visual aids that includes multi-media projector, OHP, etc. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval 		

MEDICAL TERMINOLOGIES AND RECORD KEEPING

Course Title	Medical Terminologies and Record Keeping	
Course Code	MRIT04	
Course Credit	Lecture: 2	
	Practical: 2	
	Clinical Training: 0	
	Total: 3	
Course Objectives		
This course introduces the elements of medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student's field of study. Spelling is critical and will be counted when grading tests		
#	Detailed Syllabus	Sessions
Section I		
1	Derivation of medical terms.	3
2	Define word roots, prefixes, and suffixes.	6
3	Conventions for combined morphemes and the formation of plurals.	4
4	Basic medical terms.	6
5	Form medical terms utilizing roots, suffixes, prefixes, and combining roots	6
SECTION II		
6	Interpret basic medical abbreviations/symbols.	3
7	Utilize diagnostic, surgical, and procedural terms and abbreviations related to the <ul style="list-style-type: none"> ▪ integumentary system, ▪ musculoskeletal system, ▪ respiratory system, ▪ cardiovascular system, ▪ nervous system, ▪ and endocrine system 	10
8	Interpret medical orders/reports.	6
9	Data entry and management on electronic health record system.	6
Instruction Method		

1. Teaching and training sessions will be carried out through active learning. Active participation and contribution in group discussion and seminars are mandatory for students
2. Lectures to be conducted with the help of black board and/or audio-visual aids that includes multi-media projector, OHP, etc.
3. Problem based and/or case based assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval.
4. The course includes a laboratory where the students have an opportunity to build and appreciation for the concepts being taught in lectures.
5. Instruction method will be integrated with clinical training, bedside / class room teaching and tutorials as necessary.

Text Books

1. The Language of Medicine, 10th Edition: Davi-Ellen Chabner BA MAT

MEDICAL LAW AND ETHICS

Course Title	Medical law and ethics	
Course Code	MRIT05	
Course Credit	Lecture:3	
	Practical: 0	
	Total:3	
Course Learning Outcomes.		
<ul style="list-style-type: none"> ▪ To improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice ▪ legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum. 		
Detailed Syllabus		
	Section – I	Sessions
1	Medical ethics - Definition - Goal - Scope	2
2	Introduction to Code of conduct	4
3	Basic principles of medical ethics – Confidentiality	4
4	Malpractice and negligence - Rational and irrational drug therapy	4
5	Autonomy and informed consent - Right of patients	2
6	Care of the terminally ill- Euthanasia	4
	Section II	
7	Organ transplantation	2
8	Medico legal aspects of medical records <ul style="list-style-type: none"> ▪ Medico legal case and type ▪ Records and document related to MLC ▪ ownership of medical records ▪ Confidentiality Privilege communication ▪ Release of medical information ▪ Unauthorized disclosure ▪ retention of medical records ▪ Other various aspects. 	8
9	Professional Indemnity insurance policy	4

10	Development of standardized protocol to avoid near miss or sentinel events	4
11	Obtaining an informed consent	2

Instructional Method:

1. Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
2. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval.
3. Surprise tests/Quizzes/Tutorials will be conducted.

Reference Books:

1. Medical Law and Ethics in India by H.S. Mehta

INTRODUCTION TO QUALITY AND PATIENT SAFETY

Course Title	Introduction to Quality and Patient Safety	
Course Code	MRIT06	
Course Credit	Lecture: 3	
	Practical: 0	
	Clinical Training: 0	
	Total: 3	
Course Objectives		
<ul style="list-style-type: none"> ▪ The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system. ▪ To learn about basic emergency care including first aid and triage. ▪ To learn about prevention of harm to workers, property, the environment and the general public ▪ To provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes. 		
#.	Detailed Syllabus	Sessions
Section I		
1	Quality assurance and management <ul style="list-style-type: none"> a. Concepts of Quality of Care b. Quality Improvement Approaches c. Standards and Norms d. Quality Improvement Tools e. Introduction to NABH guidelines 	4
2	Basics of emergency care and life support skills <ul style="list-style-type: none"> a. Vital signs and primary assessment b. Basic emergency care – first aid and triage c. Ventilations including use of bag-valve-masks (BVMs) d. Choking, rescue breathing methods e. One- and Two-rescuer CPR f. Using an AED (Automated external defibrillator). g. Managing an emergency including moving a patient 	8
3	Bio medical waste management and environment safety <ul style="list-style-type: none"> a. Definition of Biomedical Waste b. Waste minimization c. BMW – Segregation, collection, transportation, treatment and disposal (including color coding) d. Liquid BMW, Radioactive waste, Metals / Chemicals / Drug 	8

	<p>waste</p> <p>e. BMW Management & methods of disinfection</p> <p>f. Modern technology for handling BMW</p> <p>g. Use of Personal protective equipment (PPE)</p> <p>h. Monitoring & controlling of cross infection (Protective devices)</p>	
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Section II

4	<p>Infection prevention and control</p> <p>a. Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)],</p> <p>b. Prevention & control of common healthcare associated infections,</p> <p>c. Components of an effective infection control program,</p> <p>d. Guidelines (NABH and JCI) for Hospital Infection Control</p>	5
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5	<p>Antibiotic Resistance</p> <p>a. History of Antibiotics</p> <p>b. How Resistance Happens and Spreads</p> <p>c. Types of resistance- Intrinsic, Acquired, Passive</p> <p>d. Trends in Drug Resistance</p> <p>e. Actions to Fight Resistance</p> <p>f. Bacterial persistence</p> <p>g. Antibiotic sensitivity</p> <p>h. Consequences of antibiotic resistance</p> <p>i. Antimicrobial Stewardship- Barriers and opportunities, Tools and models in hospitals</p>	7
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6	<p>Disaster preparedness and management</p> <p>a. Fundamentals of emergency management,</p> <p>b. Psychological impact management,</p> <p>c. Resource management,</p> <p>d. Preparedness and risk reduction,</p> <p>e. Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.</p>	8
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Instruction Method

- Teaching and training sessions will be carried out through active learning. Active participation and contribution in group discussion and seminars are mandatory for students
- Lectures to be conducted with the help of black board and/or audio-visual aids that includes multi-media projector, OHP, etc.

3. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval.

Text Books

Reference Books

Professionalism and values

Course Title	Professionalism and values
Course Code	MRIT07
Course Credit	Lecture: 2
	Practical: 2
	Clinical Training: 0
	Total: 3

Course Objectives

The module on professionalism will deliver the concept of what it means to be a professional and how a specialized profession is different from a usual vocation. It also explains how relevant is professionalism in terms of healthcare system and how it affects the overall patient environment.

#.	Detailed Syllabus	Sessions
Section I		
1.	Professional values Integrity, Objectivity, Professional competence and due care, Confidentiality	25
2.	Personal values- ethical or moral values	10
3.	Attitude and behaviour- professional behaviour, treating people equally	15
Section II		
4.	Code of conduct, professional accountability and responsibility, misconduct	20
5.	Differences between professions and importance of team efforts	15
6.	Cultural issues in the healthcare environment	15

Instruction Method

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- Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval.

Text Books

1.

RESEARCH METHODOLOGY AND BIostatISTICS

Course Title	Research Methodology and Biostatistics	
Course Code	MRIT08	
Course Credit	Lecture: 3	
	Practical: 2	
	Clinical Training: 0	
	Total: 4	
Course Objectives		
The objective of this module is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings		
#.	Detailed Syllabus	Sessions
Section I		
1.	Introduction to research methods	6
2.	Identifying research problem	10
3.	Ethical issues in research	12
4.	Research design	12
Section II		
5.	Basic Concepts of Biostatistics	4
6.	Types of Data	8
7.	Research tools and Data collection methods	12
8.	Sampling methods	12
9.	Developing a research proposal	6
Instruction Method		
<ol style="list-style-type: none"> Teaching and training sessions will be carried out through active learning. Active participation and contribution in group discussion and seminars are mandatory for students Lectures to be conducted with the help of black board and/or audio-visual aids that includes multi-media projector, OHP, etc. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. 		
Text Books		
<ol style="list-style-type: none"> Methods in Bio-Statistics, by B.K. Mahajan, 6 Ed. 1997 Research for physiotherapist-Carolin hicks 		

PRINCIPLES OF MANAGEMENT

Course Title	Principles of management	
Course Code	MRIT09	
Course Credit	Lecture: 3	
	Practical: 0	
	Clinical Training: 0	
	Total: 3	
Course Objectives		
The course is intended to provide a knowledge about the basic principles of Management		
#	Detailed Syllabus	Sessions
Section I		
1	Introduction to management	2
2	Strategic Management	4
3	Foundations of Planning	2
4	Planning Tools and Techniques	6
5	Decision Making, conflict and stress management	6
Section II		
6	Managing Change and Innovation	2
7	Understanding Groups and Teams	4
8	Leadership	5
9	Time Management	5
10	Cost and efficiency	4
Instruction Method		
<ol style="list-style-type: none"> Teaching and training sessions will be carried out through active learning. Active participation and contribution in group discussion and seminars are mandatory for students Lectures to be conducted with the help of black board and/or audio-visual aids that includes multi-media projector, OHP, etc. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. 		
Text Books		
Reference Books		

COMMUNITY ORIENTATION AND CLINICAL VISIT

Course Title	Community orientation and clinical visit
Course Code	MRIT10
Course Credit	Lecture:0
	Practical: 20
	Clinical Training:0
	Total:

Course Objectives

The objective of this particular section of the foundation course is to sensitize potential learners with essential knowledge; this will lay a sound foundation for their learning across the undergraduate program and across their career. Innovative teaching methods should be used to ensure the attention of a student and make them more receptive such as group activities, interactive fora, role plays, and clinical bed-side demonstrations

#.	Detailed Syllabus	Sessions
Section I		
1.	The community orientation and clinical visit will include visit to the entire chain of healthcare delivery system -Sub centre, PHC, CHC, SDH, DH and Medical College, private hospitals, dispensaries and clinics.	10
2.	The student will also be briefed regarding governance at village level including interaction and group discussion with village panchayat and front line health workers.	15
Section II		
3.	Clinical visit to their respective professional department within the hospital.	5

Instruction Method

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- Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval.