सत्यमेव जयते

National Commission for Allied and Healthcare Professions

COMPETENCY BASED CURRICULUM

for

"Health Information Management"

As per the NCAHP Act -2021

APPROVED SYLLABUS

2025

Ministry of Health & Family Welfare

Contents

List of Abbreviations

ABC	Always Better Control
ABO	A, B, AB and O blood groups
AED	Automated External Defibrillator
AHPs	Allied and Healthcare Professionals
ANOVA	Analysis of Variance
APC	American Professional Coding
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy
BHIM	Bachelor of Health Information Management
B. Sc.	Bachelor of Science
BLS	Basic life support
BMW	Bio Medical Waste
BP	Blood Pressure
CATS	Credit Accumulation and Transfer System
CBCS	Choice-Based Credit System
CBD	Case-based discussion
CBSE	Central Board of School Education
CDI	Clinical Documentation Improvement
CEX	Mini Case Evaluation Exercise
CGPA	Cumulative Grade Point Average
CHC	Community Health Centre
CHI	Community Health Insurance
CIO	Chief Information Officer
CPR	Cardiopulmonary Resuscitation
CPT	Current Procedural Terminology
CPU	Central Processing Unit
CRPC	Code of Criminal Procedure
CSF	Cerebro Spinal Fluid
CSSD	Central Sterile Service Department
DH	District Hospital
DHIM	Diploma in Health Information Management
DICOM	Digital and Communications in Medicine
DOPs	Direct Observation of Procedures
DPSP	Directive Principles of State Policy
DRG	Diagnostic Related Groups
DSM	Diagnostic and Statistical Manual
DSS	Decision Support System
ECG	Electrocardiogram
ECTS	European Credit Transfer System
EDQ	Enterprise Data Quality Management

EHR	Electronic Health Record
EIA	Environmental Impact Assessment
EMR	Electronic Medical Records
ESE	End Semester Examination
FAB	French American British Classification
FDA	Food and Drug Administration
FIFO	First In First Out
GDPR	General Data Protection Regulation
GPA	Grade Point Average
HCPCS	Health Care Procedural Coding System
HIE	Health Information Exchange
HIM	Health Information Management
HIPAA	Health Insurance Potability and Accountability Act
HIS	Health Information System
HR	Human Resource
HRM	Human Resource Management
HOD	Head of Department
HSSC	Healthcare Sector Skill Council
IA	Internal Assessment
IAC	Internal Assessment Component
ICD	International Classification of Disease Coding
ICD- 9CM	International Classification of Disease Coding – 9 Clinical Modification
ICD-O	International Classification of Disease Coding - Oncology
ICD-PCS	International Classification of Disease Coding – Procedural Coding System
ICF	International Classification of Functioning
ICT	Information Communication Technology
IUCN	International Union for Conservation of Nature
IG	Information Governance
ILO	International Labour Organization
INR	Indian Rupee
IPC	Indian Penal Code
ISO	International Organization for Standardization
ITP	Idiopathic Thrombocytopenia
JCI	Joint Commission International
JD	Job description
LAN	Local Area Network
LHR	Legal Health Records
LIFO	Last In First Out
LTM	Long Term Memory
MAN	Metropolitan area network

M.B.B.S.	Bachelor of Medicine and Bachelor of Surgery
MIMS	Monthly Index of Medical Specialties
MLC	Medico legal case
MoHFW	Ministry of Health and Family Welfare
MPI	Master Patient Index
MRD	Medical Records Department
MoU	Memorandum of Understanding
M. Sc.	Master of Science
MS	Microsoft
NAAC	National Assessment and Accreditation Council
NABH	National Accreditation Board for Hospitals & Healthcare Providers
NBAHS	National Board of Allied Health Sciences
NCAHP	National Commission for Allied and Healthcare Professions.
NCRC	National Curricula Review Committee
NHM	National Health Mission
NHP	National Health Program
NIAHS TSU	National Initiative for Allied Health Sciences-Technical Support Unit
NMC	National Medical Commission
NPV	Negative Predictive Value
NSDA	National Skills Development Agency
NSQF	National Skills Qualification Framework
OPD	Outpatient Department
OSCE	Objective Structured Clinical Examination
OSLER	Objective Structured Long Examination Record
OSPE	Objective Structured Practical Examination
PACS	Picture Archiving and Communication System
PCM/B	Physics, Chemistry, Maths/ Biology
PG	Postgraduate
Ph.D.	Doctor of Philosophy
PHC	Primary Health Centre
PHI	Personal Health Information
PPE	Personal Protective Equipment
PPV	Positive Predictive Value
RAM	Random Access Memory
RCT	Randomized Control Trial
ROM	Read-Only Memory
RTI	Right to Information Act
SCA	Sudden Cardiac Arrest
SDH	Sub District Hospital
SDL	Self-Directed Learning

SNDO	Standard Nomenclature of Pathology
SNOMED-CT	Systematized Nomenclature for Medicine – Clinical Terminology
SNOP	Systemized Nomenclature of Pathology
SPDI	Sensitive Personal Data or Information
SQL	System Query Language
STM	Short Term Memory
UGC	University Grants Commission
UHC	Universal Health Care
UK	United Kingdom
USA	United States of America
WAC	Weighted Average Cost
WAN	Wide area network
WBC	White Blood Cells
WWW	World Wide Web

Chapter 1
Introduction to the Handbook

Chapter 1: Introduction to the Handbook

The report 'From Paramedics to Allied Health Professionals: Landscaping the Journey and Way Forward' that was published in 2012, marked the variance in education and training practices for the allied and healthcare programs offered by institutions across the country. This prompted the Ministry of Health and Family Welfare to envisage the creation of national guidelines for education and career pathways of allied and healthcare professionals, with a structured curriculum based on skills and competencies. Thus, this handbook has been designed to familiarize universities, colleges, healthcare providers as well as educators offering allied and healthcare programs with these national standards.

Individually, created for different professional groups of allied and healthcare, this handbook aims to reduce the variation in education by comprising of a standardized curriculum, career pathways, nomenclature and other details for each profession. The change from a purely didactic approach will create better skilled professionals and improve the quality of overall patient care. In the absence of a national standard-setting authority, this handbook can also guide the thousands of young adults who choose healthcare as a profession – not as doctors or nurses but to play several other critical roles – on the appropriate course of action to enable them to be skilled allied and healthcare professionals of the future.

Who is an Allied and Healthcare Professional?

The Ministry of Health and Family Welfare, accepted in its entirety the definition of an allied and healthcare professional based on the afore-mentioned report, though the same has evolved after multiple consultations and the recommended definition is now as follows-

'Allied and healthcare professionals (AHPs) includes individuals involved with the delivery of health or healthcare related services, with qualification and competence in therapeutic, diagnostic, curative, preventive and/or rehabilitative interventions. They work in multidisciplinary health teams in varied healthcare settings including doctors (physicians and specialist), nurses and public health officials to promote, protect, treat and/or manage a person('s) physical, mental, social, emotional, environmental health and holistic well-being.'[1]

Since the past few years, many professional groups have been interacting and seeking guidance on all those who would qualify under the purview of "allied and healthcare professionals". In the healthcare system, statutory bodies exist for clinicians, nurses, pharmacists and dental practitioners; but a regulatory structure for around 50 professions is absent in India. Currently, the Government is considering these professions (as listed Annex-1) under the ambit of the allied and healthcare system. However, this number is subject to changes and modifications over time, particularly considering how quickly new technologies and new clinical avenues are expanding globally, creating newer cadres of such professionals.

Scope and need for allied and healthcare professionals in the Indian healthcare system

The quality of medical care has improved tremendously in the last few decades due to the advances in technology, thus creating fresh challenges in the field of healthcare. It is now widely recognized that health service delivery is a team effort involving both clinicians and non-clinicians, and is not the sole duty of physicians and nurses.[1] Professionals that can competently handle sophisticated machinery and advanced protocols are now in high demand. In fact, diagnosis is now so dependent on technology, that allied and healthcare professionals (AHPs) are vital to successful treatment delivery.

Effective delivery of healthcare services depends largely on the nature of education, training and appropriate orientation towards community health of all categories of health personnel, and their capacity to function as an integrated team. For instance in the UK, more than 84,000 AHPs, with a range of skills and expertise, play key roles within the National Health Service, working autonomously, in multi-professional teams in various settings. All of them are first-contact practitioners and work across a wide range of locations and sectors within acute, primary and community care. Australia's health system is managed not just by their doctors and nurses, but also by the 90,000 university-trained, autonomous AHPs vital to the system.[2,3]

As the Indian government aims for Universal Health Coverage, the lack of skilled human resource may prove to be the biggest impediment in its path to achieve targeted goals. The benefits of having AHPs in the healthcare system are still unexplored in India. Although an enormous amount of evidence suggests that the benefits of AHPs range from improving access to healthcare services to significant reduction in the cost of care, though the Indian healthcare system still revolves around the doctor-centric approach. The privatization of healthcare has also led to an ever-increasing out-of-pocket expenditure by the population. However, many examples assert the need of skilled allied and healthcare professionals in the system, such as in the case of stroke survivors, it is the support of AHPs that significantly enhance their rehabilitation and long term treatment ensures return to normal life. AHPs also play a significant role to care for patients who struggle mentally and emotionally in the current challenging environment and require mental health support; and help them return to well-being.[2] Children with communication difficulties, the elderly, cancer patients, patients with long term conditions such as diabetes people with vision problems and amputees; the list of people and potential patients who benefit from AHPs is indefinite.

Thus, the breadth and scope of the allied and healthcare practice varies from one end to another, including areas of work listed below:

- Across the age span of human development from neonate to old age;
- With patients having complex and challenging problems resulting from systemic illnesses such as in the case of diabetes, cardiac abnormalities/conditions and elderly care to name a few;

- Towards health promotion and disease prevention, as well as assessment, management and evaluation of interventions and protocols for treatment;
- In a broad range of settings from a patient's home to community, primary care centers, to tertiary care settings; and
- With an understanding of the healthcare issues associated with diverse socio-economies and cultural norms within society.

Learning goals and objectives for allied and healthcare professionals.

The handbook has been designed with a focus on performance-based outcomes pertaining to different levels. The learning goals and objectives of the undergraduate and graduate education program will be based on the performance expectations. They will be articulated as learning goals (why we teach this) and learning objectives (what the students will learn). Using the framework, students will learn to integrate their knowledge, skills and abilities in a hands-on manner in a professional healthcare setting. These learning goals are divided into nine key areas, though the degree of required involvement may differ across various levels of qualification and professional cadres:

1. Clinical care
2. Communication
3. Membership of a multidisciplinary health team
4. Ethics and accountability at all levels (clinical, professional, personal and social)
5. Commitment to professional excellence
6. Leadership and mentorship
7. Social accountability and responsibility
8. Scientific attitude and scholarship (only at higher level- PhD)
9. Lifelong learning

1. Clinical Care[4]

Using a patient/family-centered approach and best evidence, each student will organize and implement the prescribed preventive, investigative and management plans; and will offer appropriate follow-up services. Program objectives should enable the students to:

- Apply the principles of basic science and evidence-based practice
- Use relevant investigations as needed
- Identify the indications for basic procedures and perform them in an appropriate manner
- Provide care to patients – efficiently and in a cost-effective way – in a range of settings, and maintain foremost the interests of individual patients
- Identify the influence of biological, psychosocial, economic, and spiritual factors on patients' well-being and act in an appropriate manner
- Incorporate strategies for health promotion and disease prevention with their patients

2. Communication[4,5]

The student will learn how to communicate with patients/clients, care-givers, other health professionals and other members of the community effectively and appropriately. Communication is a fundamental requirement in the provision of health care services. Program objectives should enable the students to:

- Provide sufficient information to ensure that the patient/client can participate as actively as possible and respond appropriately to the information
- Clearly discuss the diagnosis and options with the patient, and negotiate appropriate treatment plans in a sensitive manner that is in the patient's and society's best interests
- Explain the proposed healthcare service – its nature, purpose, possible positive and adverse consequences, its limitations, and reasonable alternatives wherever they exist
- Use effective communication skills to gather data and share information including attentive listening, open-ended inquiry, empathy and clarification to ensure understanding
- Appropriately communicate with, and provide relevant information to, other stakeholders including members of the healthcare team
- Use communication effectively and flexibly in a manner that is appropriate for the reader or listener
- Explore and consider the influence that the patient's ideas, beliefs and expectations have during interactions with them, along with varying factors such as age, ethnicity, culture and socioeconomic background
- Develop efficient techniques for all forms of written and verbal communication including accurate and timely record keeping
- Assess their own communication skills, develop self-awareness and be able to improve their relationships with others
- Possess skills to counsel for lifestyle changes and advocate health promotion

3. Membership of a multidisciplinary health team[6]

The student will put a high value on effective communication within the team, including transparency about aims, decisions, uncertainty and mistakes. Team-based health care is the provision of health services to individuals, families, and/or their communities by at least two health providers who work collaboratively to accomplish shared goals within and across settings to achieve coordinated, high quality care. Program objectives will aim at making the students being able to:

- Recognize, clearly articulate, understand and support shared goals in the team that reflect patient and family priorities
- Possess distinct roles within the team; to have clear expectations for each member's functions, responsibilities, and accountabilities, which in turn optimizes the team's efficiency and makes it possible for them to use division of labor advantageously, and accomplish more than the sum of its parts

- Develop mutual trust within the team to create strong norms of reciprocity and greater opportunities for shared achievement
- Communicate effectively so that the team prioritizes and continuously refines its communication channels creating an environment of general and specific understanding
- Recognize measurable processes and outcomes, so that the individual and team can agree on and implement reliable and timely feedback on successes and failures in both the team's functioning and the achievement of their goals. These can then be used to track and improve performance immediately and over time.

4. Ethics and accountability

Students will understand core concepts of clinical ethics and law so that they may apply these to their practice as healthcare service providers. Program objectives should enable the students to:

- Describe and apply the basic concepts of clinical ethics to actual cases and situations
- Recognize the need to make health care resources available to patients fairly, equitably and without bias, discrimination or undue influence
- Demonstrate an understanding and application of basic legal concepts to the practice
- Employ professional accountability for the initiation, maintenance and termination of patient-provider relationships
- Demonstrate respect for each patient's individual rights of autonomy, privacy, and confidentiality

5. Commitment to professional excellence[7]

The student will execute professionalism to reflect in his/her thought and action a range of attributes and characteristics that include technical competence, appearance, image, confidence level, empathy, compassion, understanding, patience, manners, verbal and non-verbal communication, an anti-discriminatory and non-judgmental attitude, and appropriate physical contact to ensure safe, effective and expected delivery of healthcare. Program objectives will aim at making the students being able to:

- Demonstrate distinctive, meritorious and high quality practice that leads to excellence and that depicts commitment to competence, standards, ethical principles and values, within the legal boundaries of practice
- Demonstrate the quality of being answerable for all actions and omissions to all, including service users, peers, employers, standard-setting/regulatory bodies or oneself
- Demonstrate humanity in the course of everyday practice by virtue of having respect (and dignity), compassion, empathy, honour and integrity
- Ensure that self-interest does not influence actions or omissions, and demonstrate regards for service-users and colleagues

6. Leadership and mentorship[8]

The student must take on a leadership role where needed in order to ensure clinical productivity and patient satisfaction. They must be able to respond in an autonomous and confident manner to planned and uncertain situations, and should be able to manage themselves and others effectively. They must create and maximize opportunities for the improvement of the health seeking experience and delivery of healthcare services. Program objectives should enable the students to:

- Act as agents of change and be leaders in quality improvement and service development, so that they contribute and enhance people's wellbeing and their healthcare experience
- Systematically evaluate care; ensure the use of these findings to help improve people's experience and care outcomes, and to shape clinical treatment protocols and services
- Identify priorities and effectively manage time and resources to ensure the maintenance or enhancement of the quality of care
- Recognize and be self-aware of the effect their own values, principles and assumptions may have on their practice. They must take charge of their own personal and professional development and should learn from experience (through supervision, feedback, reflection and evaluation)
- Facilitate themselves and others in the development of their competence, by using a range of professional and personal development skills
- Work independently and in teams. They must be able to take a leadership role to coordinate, delegate and supervise care safely, manage risk and remain accountable for the care given; actively involve and respect others' contributions to integrated person-centered care; yet work in an effective manner across professional and agency boundaries. They must know when and how to communicate with patients and refer them to other professionals and agencies, to respect the choices of service users and others, to promote shared decision-making, to deliver positive outcomes, and to coordinate smooth and effective transition within and between services and agencies.

7. Social Accountability and Responsibility[9]

The students will recognize that allied and healthcare professionals need to be advocates within the health care system, to judiciously manage resources and to acknowledge their social accountability.[10] They have a mandate to serve the community, region and the nation and will hence direct all research and service activities towards addressing their priority health concerns. Program objectives should enable the students to:

- Demonstrate knowledge of the determinants of health at local, regional and national levels and respond to the population needs

- Establish and promote innovative practice patterns by providing evidence-based care and testing new models of practice that will translate the results of research into practice, and thus meet individual and community needs in a more effective manner
- Develop a shared vision of an evolving and sustainable health care system for the future by working in collaboration with and reinforcing partnerships with other stakeholders, including academic health centres, governments, communities and other relevant professional and non-professional organizations
- Advocate for the services and resources needed for optimal patient care

8. Scientific attitude and Scholarship[10]

The student will utilize sound scientific and/or scholarly principles during interactions with patients and peers, educational endeavors, research activities and in all other aspects of their professional lives. Program objectives should enable the students to:

- Engage in ongoing self-assessment and structure their continuing professional education to address the specific needs of the population.
- Practice evidence-based by applying principles of scientific methods.
- Take responsibility for their educational experiences.
- Acquire basic skills such as presentation skills, giving feedback, patient education and the design and dissemination of research knowledge; for their application to teaching encounters.

9. Lifelong learning[11]

The student should be committed to continuous improvement in skills and knowledge while harnessing modern tools and technology. Program objectives will aim at making the students being able to:

- Perform objective self-assessments of their knowledge and skills; learn and refine existing skills; and acquire new skills
- Apply newly gained knowledge or skills to patient care
- Enhance their personal and professional growth and learning by constant introspection and utilizing experiences
- Search (including through electronic means), and critically evaluate medical literature to enable its application to patient care
- Develop a research question and be familiar with basic, clinical and translational research in its application to patient care
- Identify and select an appropriate, professionally rewarding and personally fulfilling career pathway

Introduction of new elements in allied and healthcare education

Competency-based curriculum

A significant skill gap has been observed in the professionals offering healthcare services irrespective of the hierarchy and level of responsibility in the healthcare settings. The large variation in the quality of services is due to the diverse methodologies opted for healthcare education and the difference in expectations from a graduate after completion of a course and at work. What one is expected 'to perform' at work is assumed to be learned during the course, however, the course design focuses on what one is expected 'to know'. The competency-based curriculum thus connects the dots between the 'know what' and 'do how'.

The efficiency and effectiveness of any educational Program largely depends on the curriculum design that is being followed. With emerging medical and scientific knowledge, educators have realized that learning is no more limited to memorizing specific lists of facts and data; in fact, by the time the professional aims to practice in the healthcare setting, the acquired knowledge may stand outdated. Thus, competency-based education is the answer; a curricular concept designed to provide the skills that professionals need. A competency-based program is a mix of skills and competencies based on individual or population needs (such as clinical knowledge, patient care, or communications approaches), which is then developed to teach relevant content across a range of courses and settings. While the traditional system of education focuses on objectives, content, teacher-centric approach and summative evaluation; competency-based education has a focus on competencies, outcomes, performance and accomplishments. In such a case, teaching activities are learner-centered, and evaluation is continuous and formative in structure. The competency-based credentials depend on the demonstration of a defined set of competencies which enables a professional to achieve targeted goals. Competency frameworks comprise of a clearly articulated statement of a person's abilities on the completion of the credential, which allows students, employers, and other stakeholders to set their expectations appropriately.[12 13]

Considering the need of the present and future healthcare delivery system, the curriculum design depicted in this handbook thus will be based on skills and competencies.

Promoting self-directed learning of the professionals

The shift in the focus from traditional to competency-based education has made it pertinent that the learning processes may also be revisited for suitable changes. It is a known fact that learning is no more restricted to the boundaries of a classroom or the lessons taught by a teacher. The new tools and technologies have widened the platform and introduced innovative modes of how students can learn and gain skills and knowledge. One of the innovative approaches is learner-centric and follows the concept of **self-directed learning.**

Self-directed learning, in its broadest meaning, describes a process in which individuals take the initiative with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying resources for learning, choosing and implementing learning strategies and evaluating learning outcomes (Knowles, 1975).[14]

In self-directed learning, learners themselves take the initiative to use resources rather than simply reacting to transmissions from resources, which helps them learn more in a better way.[15] Lifelong, self-directed learning (SDL) has been identified as an important ability for medical graduates (Harvey, 2003)[16] and so is applicable to other health professionals including AHPs. It has been proven through many studies worldwide that the self-directed method is better than the teacher-centric method of learning. Teacher-directed learning makes learners more dependent and the orientation to learning becomes subject-centered. If a teacher provides the learning material, the student is usually satisfied with the available material, whereas if a student is asked to work on the same assignment, he or she invariably has to explore extensive resources on the subject.[15]

Thus the handbook promotes self-directed learning, apart from the usual classroom teaching and opens the platform for students who wish to engage in lifelong learning.

Credit hours vs traditional system

Recently the National Assessment and Accreditation Council (NAAC) and the University Grants Commission (UGC) have highlighted the need for the development of a Choice-Based Credit System (CBCS), at par with global standards and the adoption of an effective grading system to measure a learner's performance.[17] All the major higher education providers across the globe are operating a system of credits. The European Credit Transfer System (ECTS), the 'National Qualifications Framework' in Australia, the Pan-Canadian Protocol on the Transferability of University Credits, the Credit Accumulation and Transfer System (CATS) in the UK as well as the systems operating in the US, Japan, etc. are examples of these. Globally, a need now exists for the use of a fully convertible credit-based system that can be accepted at other universities. It has now become imperative to offer flexible curricular choices and provide learners mobility due to the popularity of initiatives such as 'twinning Programs', 'joint degrees' and 'study abroad' Programs.[18]

In order to ensure global acceptability of the graduates, the current curriculum structure is divided into smaller sections with focus on hours of studying which can be converted into credit hours as per the international norms followed by various other countries.

Integrated structure of the curriculum

Vertical integration, in its truest sense, is the interweaving of teaching clinical skills and knowledge into the basic science years and, reinforcing and continuing to teach the applications of basic science concepts during the clinical years. (Many efforts called 'vertical integration' include only the first half of the process).

Horizontal integration is the identification of concepts or skills, especially those that are clinically relevant, that cut across (for example, the basic sciences), and then putting these to use as an integrated focus for presentations, clinical examples, and course materials. e.g. Integration of some of the basic science courses around organ systems, e.g., human anatomy, physiology, pathology; or incorporating ethics, legal issues, finance, political issues, humanities, culture and computer skills into different aspects of a course like the Clinical Continuum.

The aim of an integrated curriculum is to lead students to a level of scientific fluency that is beyond mere fact and concept acquisition, by the use of a common language of medical science, with which they can begin to think creatively about medical problems.[19]

This innovative new curriculum has been structured in a way such that it facilitates horizontal and vertical integration between disciplines; and bridges the gaps between both theory & practice, and between hospital-based practice and community practice. The amount of time devoted to basic and laboratory sciences (integrated with their clinical relevance) would be the maximum in the first year, progressively decreasing in the second and third year of the training, making clinical exposure and learning more dominant.[11] However it may differ from program to program depending on the professional group.

Introduction of foundation course in the curriculum

The foundation course for allied and healthcare professions is an immersive program designed to impart the required knowledge, skills and confidence for seamless transition to the second semester of a professional allied and healthcare course. Post admission, the foundation course is designed for a period of 6 months to prepare a student to study the respective allied and healthcare program effectively and to understand the basics of healthcare system. This aims to orient the student to national health systems and the basics of public health, medical ethics, medical terminologies, communication skills, basic life support, computer learning, infection prevention and control, environmental issues and disaster management, as well as orientation to the community with focus on issues such as gender sensitivity, disability, human rights, civil rights etc. Though the flexibility to the course designers have been provided in terms of – modifying the required numbers of hours for each foundation subject and appropriate placement of the subject across various semesters.

Learning methodologies

With a focus on self-directed learning, the curriculum will include a foundation course that focuses on communication, basic clinical skills and professionalism; and will incorporate clinical training from the first year itself. It is recommended that the primary care level should have sufficient clinical exposure integrated with the learning of basic and laboratory sciences. There should also be an emphasis on the introduction of case scenarios for classroom discussion/case-based learning.

Healthcare education and training is the backbone of an efficient healthcare system and India's education infrastructure is yet to gain from the ongoing international technological revolution. The report '*From Paramedics to Allied Health: Landscaping the Journey and way ahead'*, indicates that teaching and learning of clinical skills occur at the patient's bedside or other clinical areas such as laboratories, augmented by didactic teaching in classrooms and lecture theatres. In addition to keeping up with the pace of technological advancement, there has been a paradigm shift to outcome-based education with the adoption of effective assessment patterns. However, the demand for demonstration of competence in institutions where it is currently limited needs to be promoted. The report also mentions some of the allied and healthcare schools in India that have instituted clinical skill centres, laboratories and high-fidelity simulation laboratories to enhance the practice and training for allied and healthcare students and professionals. The report reiterates the fact that simulation is the replication of part or all of a clinical encounter through the use of mannequins, computer-assisted resources and simulated patients. The use of simulators addresses many issues such as suboptimal use of resources and equipment, by adequately training the manpower on newer technologies, limitations for imparting practical training in real-life scenarios, and ineffective skills assessment methods among others.[1] The table mentioned below lists various modes of teaching and learning opportunities that harness advanced tools and technologies.

Table 1 Clinical learning opportunities imparted through the use of advanced techniques1,20

Teaching modality	Learning opportunity examples
Patients	Teach and assess in selected clinical scenarios
	Practice soft skills
	Practice physical examination
	Receive feedback on performance
Mannequins	Perform acquired techniques
	Practice basic procedural skills
	Apply basic science understanding to clinical problem solving
Simulators	Practice teamwork and leadership
	Perform cardiac and pulmonary care skills
	Apply basic science understanding to clinical problem solving
Task under trainers	Monitor and terminate dialysis treatment, etc.

Assessment methods

Traditional assessment of students consists of the yearly system of assessments. In most institutions, assessments consist of internal and external assessments, and a theory examination at the end of the year or semester. This basically assesses knowledge instead of assessing skills or competencies. In competency-based training, the evaluation of the students is based on the performance of the skills as per their competencies. Hence, all the three attributes – knowledge, skills, and attitudes – are assessed as required for the particular competency.

Several new methods and tools are now readily accessible, the use of which requires special training. Some of these are given below:

- Objective Structured Clinical Examination (OSCE), Objective Structured Practical Examination (OSPE), Objective Structured Long Examination Record (OSLER)
- Mini Case Evaluation Exercise (CEX)
- Case-based discussion (CBD)
- Direct observation of procedures (DOPs)
- Portfolio
- Multi-source feedback
- Patient satisfaction questionnaire

An objective structured clinical examination (OSCE) is used these days in a number of allied and healthcare programs, e.g. Optometry, Physiotherapy, and Radiography. It tests the performance and competence in communication, clinical examination, and medical procedures/prescriptions. In physiotherapy, orthotics, and occupational therapy, it tests exercise prescription, joint mobilization/manipulation techniques; and in radiography it tests radiographic positioning, radiographic image evaluation, and interpretation of results. The basic essential elements consist of functional analysis of the occupational roles, translation of these roles ("competencies") into outcomes, and assessment of trainees' progress in these outcomes on the basis of demonstrated performance. Progress is defined solely by the competencies achieved and not the underlying processes or time served in formal educational settings. Most methods use predetermined, agreed assessment criteria (such as observation check-lists or rating scales for scoring) to emphasize on frequent assessment of learning outcomes. Hence, it is imperative for teachers to be aware of these developments and they should suitably adopt them in the allied and healthcare education system.[21]

Chapter 2
Methodology of Curriculum Development

Chapter 2: Methodology of curriculum development

Overview:

With the release of the report 'From Paramedics to Allied Health: Landscaping the journey and the way ahead', the Ministry of Health and Family Welfare prioritized the key recommendations and concerns raised by various allied and healthcare professionals groups and experts as indicated in the report. One of the major recommendations in the report was the need for standardization of curriculum and pedagogic requirements for the major allied and healthcare professional programs.

The MoHFW has identified 12 priority professional streams in the phase-I for the purpose of standardization. The expertise of over 50 leading public and private allied and healthcare educational institutions for 12 different disciplines has been sought as part of this exercise. Additionally, international experts from Canada, Sweden, USA and UK are also being roped in, to arrive at a comprehensive and globally acceptable set of educational standards based on a skills and competencies approach. The opinions were sought from experts for all the programs, though curricula for the following two professions were not redesigned as they fall under the ambit of regulatory body- Rehabilitation Council of India governed by Ministry of Social Justice and Empowerment –

- Audiology and Speech Pathology
- Orthotics and Prosthetics

The National Skills Development Agency has also developed the National Skills Qualification Framework (NSQF). Under the aegis of the NSDA, the Healthcare Sector Skill Council (HSSC) has undertaken a similar process for a few entry level allied and healthcare programs (Certificate and Diploma level). The focus of Ministry of Health and Family Welfare is thus to pre-empt duplication of efforts and arrive at a comprehensive set of minimum standards for the allied and healthcare professions but for higher level professional qualifications. This would ensure that the key considerations and obligations of both the public and the private sector are adequately addressed.

In view of the above, the Ministry of Health and Family Welfare instituted 12 National Curricula Redesign Taskforce groups comprising of academicians and professionals from the best institutes and colleges across the country. These people served as subject experts and redesigned the curricula based on a standardized framework developed by the NIAHS TSU (National Initiative for Allied Health Sciences-Technical Support Unit), which is the technical arm supporting this project. The final curriculum has been reviewed and approved by the National Curricula Review Committee (NCRC), (constituted by the MoHFW), that consists of experts with versatile and immense experience in their respective streams, to assess the applicability of the curricula drafted in view of the healthcare system as a whole.

Steps undertaken in the curricula review process –

1. Curricula were sought from various States and institutions across the country in response to which the NIAHS TSU reviewed–
    a. 118 curricula of allied and healthcare programs (different levels and different professions) from 10 states across the country;
    b. 133 curricula of various allied and healthcare programs collected during phase-I of the NIAHS project.
2. Literature review –a comprehensive literature review was undertaken resulting in a detailed curriculum of the allied and healthcare programs, which included competency and skills-based models followed nationally as well as internationally, methodologies of curriculum development, assessment protocols, and many such aspects of curriculum development. The literature review helped the TSU to develop a reference document that comprised of a standard framework for a competency-based curriculum to be followed for the curricula review and redesign. A detailed mapping of all the resources was undertaken and shared with the taskgroup experts via email.
3. Constitution of the National Curricula Redesign Taskforces for various professional groups – Specific taskforces were then instituted comprising of technical as well as subject experts who were engaged in the process of redesigning the curriculum.
4. Constitution of the National Curricula Review Committee (NCRC) – The NCRC comprising of experts with versatile and immense experiences of their respective domain, was then constituted for final review and approval on the curriculum drafted by the taskforce and NIAHS TSU.
5. National Curricula Redesign Taskforce Consultations– a series of consultations were conducted with subject experts including both regional and national taskgroup experts to develop a 'skill and competency' framework for education and career pathways. The consultations were facilitated by the NIAHS TSU members and were led by the chairperson of the group. Post this, the draft version and recommendations were compiled by the TSU members and sent to the experts for final review and consent.
6. Local consultations – These were also conducted in different hospitals and other healthcare settings to get suggestions, feedbacks and ideas from the subject experts for their respective curricula.
7. Response draft – Comments and suggestions were received on the draft and a response draft curriculum was prepared, which was then re-circulated for final consent and validation by the taskgroup experts.
8. Submission and approval of draft curriculum – The final draft of the curriculum handbook was then submitted by the taskforce chairman to the National Curricula Review Committee for approval and final sign-off.
9. Public opinion – The handbook was uploaded to seek public opinion from national and international experts, students, faculty, and practitioners of the respective professional groups.

10. Final approval by the NCRC- The comments and suggestions by the public were then reviewed and considered for any possible modification by the taskforce group. The final approval and sign off for the overall structure was then sought from NCRC.
11. Dissemination- The final handbook (guidelines) is disseminated by the Ministry of Health and Family Welfare for further adoption and incorporation by institutes/universities as applicable to ensure standardization.

Methodology of curriculum development by the taskforce

Considering the national and international healthcare landscape, regulatory frameworks, and emerging trends, the HIM taskforce have adopted the following processes for the design and development of Health Information Management Curriculum for Bachelors and Master level:

1. **Needs Assessment**:
   - Conducted a thorough analysis of the current state of the Health Information Management field in India and other countries. This involved reviewing industry trends, advancements in healthcare technology, regulatory requirements, and job market demands in India and globally.
   - Identified the knowledge, specific skill sets, and essential competencies required for the HIM professionals to succeed in their roles in the healthcare industry in the context of evolving digital health ecosystem.
   - Analysed the educational and training needs of students aspiring to pursue careers in Health Information Management, considering factors such as academic background, prior experience, and career goals.

2. **Establish Program Goals and Objectives**:
   - Based on the result of need assessment, the taskforce has framed the goal and learning objectives of Health Information Management Programs in line with the needs of the healthcare industry, and the expected outcomes for graduates.
   - These learning objectives are specific, measurable, achievable, relevant, and time-bound (SMART) and aligned with the national and international industry standards, accreditation requirements, and the program's mission.

3. **Gather Input from Stakeholders**:
   - The taskforce has also discussed and taken feedback from the various stakeholders, including employers, industry professionals, educators, students, alumni of few institutions where the Bachelor and Master's programs are offered. The taskforce has also reviewed the compliance of accrediting bodies such as NABH, JCI and others related to Health Information Management Professionals.
   - Considering the perspectives and needs of all stakeholders, the taskforce has ensured that the content of curriculum should meets the expectations of employers, prepares students for real-world challenges, and aligns with academic and industry standards.

4. **Curriculum Design**:
   - Based on the needs assessment and stakeholder input, the taskforce has
     a) designed the overall structure of the curriculum, including core courses, elective options, and any specialization tracks.
     b) determined the sequencing of courses, considering prerequisites, core requisites, and the progressive development of skills and knowledge throughout the program.
     c) mapped out the distribution of credits, contact hours, and learning outcomes for each course to ensure coherence and balance in the curriculum.

5. **Course Development**:
   - The overall structure of the program is then sent to subject matter expert for review and comments.
   - Once finalize, the taskforce has developed the detailed course outlines and syllabi for each component of the curriculum.
   - While designing the syllabi of each course, the learning objectives are clearly defined specifying the knowledge, skills, and competencies that students are expected to acquire during the study.
   - The instructional strategies, learning activities, assignments, and assessments are objectively defined to support the achievement of learning objectives and engage students in active learning.
   - The resources required for the delivery of the program including textbooks, readings, software tools, and laboratory equipment are identified and listed in the model curriculum to support teaching and learning in each course.

6. **Integration of Core Competencies**:
   - The core competencies essential for a HIM professionals, such as health data management, information technology, healthcare regulations, data analytics, communication skills, and ethical principles are identified and listed in detail in the curriculum.
   - While detailing the course competencies the taskforce has ensured that these core competencies are integrated throughout the curriculum, with opportunities for students to develop and demonstrate proficiency in each area.
   - The assignments, projects, and assessments that explicitly address key competencies are discussed and documented to provide opportunities for students to apply their knowledge in practical contexts.

7. **Incorporate Experiential Learning Opportunities**:
   - The experiential learning components, such as internships, practicums, clinical rotations, or capstone projects are included to allow students in gaining hands-on experience in real-world healthcare settings.
   - To promoted experiential learning, certain guidelines are provided to the institute to establish partnerships with healthcare organizations, medical facilities, or health information management departments to facilitate student placements and ensure the quality of experiential learning experiences.

- Emphasis is given to provide guidance, supervision, and mentorship to students during their experiential learning activities to support their professional growth and development.

8. **Review and Revision**:
   - Once the curriculum is designed and developed, it is reviewed at the taskforce level and by other stakeholders to ensure its relevance, effectiveness, and alignment with industry standards and best practices.
   - The model curriculum draft is thoroughly reviewed by the expert committee of the Interim Commission of Allied Health Professions (ICAHP).
   - The curriculum is also placed for the public opinion to get response from the practitioners and academicians.
   - The comment received form the reviews and public opinion are well taken to improvise the curriculum to create a competent and skilled health information workforce to meet the healthcare institution and industry demand.

9. **Implementation**
   - The curriculum is submitted to the Chairman, National Commission of Allied and Health Professions for the final approval and further implementation.

List of Expert taskforce members:

S.No	Expert Name	Designation	Affiliations
1	Dr. Sabu K M	Professor of Health Information Member – ICAHP (Task force lead)	MCHP, Manipal Academy of Higher Education (MAHE), Manipal, Karnataka
2	Dr. Rajesh Kumar Sinha	Dean – Academics & Director – Centre for online program	SGT University, Gurgaon, Gurugram, Haryana
3	Mr. Sivaprasad R	Senior Medical Records Officer	Sree Chitra Tirunal Institute of Medical Sciences and Technology, Thiruvananthapuram, Kerala
4	Dr. Preethi Chauhan	Professor of Biochemistry	Dept. Biochemistry, Lady Hardinge Medical College, New Delhi
5	Mr. Niranjan Bhor	Consultant	The George Institute of Global Health, India

Chapter 3
Background of the profession

Chapter 3: Background of the profession

Statement of Philosophy– Why this profession holds so much importance?

A Health Information Management (HIM) Professional is one of the key positions in a healthcare organization responsible for management of various health related information of patient generated within the healthcare system. HIM involves maintaining, collecting, analysing protecting and disseminating traditional and digital medical information essential for delivery of quality care. The World Health Organization stated that the proper collection, management and use of information within the healthcare systems will determine the system's effectiveness in detecting health problems, defining priorities, identifying innovative solutions and allocating resources to improve health outcomes.

About Health Information Management

Health Information Management covers a broad spectrum of information pertaining to health of the people generated within or outside a healthcare system. Every day, tens of thousands of people across the country visits various healthcare facilities, and these facilities generate huge volume of information pertaining to people health. The majority of healthcare data of a person is captured in a medical record digitally or manually maintained and this includes a wide range of information such as socio-demographic details, family history, past and present illness, physical findings, investigation reports, diagnosis, treatment, medication, etc. Proper management of such vital health information is crucial for patient and physician for continuity of care as well as beneficial for different purposes: health insurance, statistics, research, healthcare administration, policy formulation, public health management, medico-legal cases etc.

Scope of practice

A Health Information Management professional responsibility cover the collection, storage, analysis and dissemination of healthcare information within the healthcare system. HIM personnel's in a healthcare setting would ensure the accuracy and timeliness of patient data for the continuity of quality care. The HIM professionals are essential for all healthcare setting to generate reports and records about patient care, design and manage health information systems, maintain security and legal aspects of patient records and establishing appropriate procedures to protect patient data. A well trained and skilled HIM professionals would be able to take up various challenging positions in public and private hospitals, public health services, health insurance sector, healthcare IT & research organizations and education institutions.

Recognition of Title and qualification

Within the healthcare team, the person responsible for collecting and managing a patient's information for efficient care is the HIM professional, also earlier referred to as a medical record keeper. However, HIM is the internationally accepted nomenclature for the profession.

The recommended title thus stands as the Health Information Management (HIM) professional for this group.

It is a known fact that with the career advancement the nomenclature will also vary and will also depend on the sector and profile of the professional. Thus the taskforce has provided the following nomenclature table to map the career pathways and progression in different sectors of professional practice for HIM professionals. The table also indicates the corresponding level of qualification with experience required by the professional to fulfil the requirements of each level.

Table 2: Nomenclature based on career progression for Health Information Management

S.No.	Nomenclature in various sectors			Qualification and experience
	Proposed Professional titles	**Existing equivalent Professional titles**	**Academic Titles**	
1.	Health Information Management Assistant (Diploma)	Medical coder/Coding clerk	NA	Diploma (2 years program), six months work experience
2.	Senior Health Information Management Assistant (Diploma)	Medical record technician – I	NA	Diploma in Health Information Management and 2-3 years' work experience
3.	Health Information Management Technologist (Degree)	Medical record technician – II /Medical records assistant	Tutor (Degree)	B.Sc. Health Information Management (HIM) with minimum 6 months' work experience
4.	Health Information Management Officer (Degree)	Junior Medical Records Officer	Asst. Lecturer (Graduate)	B.Sc. HIM with 2 – 3 years' work experience
5.	Asst. Manager -HIM (Degree and above)	Assistant Medical Records Officer	Lecturer/ Assistant Professor	B.Sc. HIM with 6-8 years' work experience/ M.Sc. Health Information Management with two years' experience. (For academic position, M.Sc. Health Information Management)
6.	Deputy Manager – HIM (Degree and above)	Medical Records Officer	Associate Professor	B.Sc. HIM with 10 years' work experience/ M.Sc. Health Information Management (HIM) with 3-5 years' work experience (For academic position, M.Sc. HIM with PhD with minimum of 5 years teaching experience)
7.	Manager -HIM / Health Information Compliance officer (Degree and above)	Senior Medical Records Officer / Chief Medical Records Officer	Professor	B.Sc. HIM with 15 – 18 years' experience/ M.Sc. HIM with 8 -10 years' work experience. (For academic position, M.Sc. HIM with PhD with minimum of 10 years teaching experience)

Definition of Health Information Management Professional

A Health Information Management (HIM) Professional highly trained professionals maintains the medical records and clinical information of patients in a manner consistent with medical, administrative, ethical, legal, and regulatory requirements of the health care system. HIM professionals understand the clinical workflow of different healthcare settings and ensure the patient health information is complete, accurate and protected[22]. HIM professionals are responsible for the quality, integrity, security, and protection of patient's health information in manual as well as digital forms. HIM professionals often work as a bridge connecting clinical, operational, and administrative functions within the healthcare system[24]. HIM professionals play vital role in the integration of information technology and digital health solutions for the effective use of healthcare data.

Education

When developing any educational Program, it is necessary that it should be planned such that it is outcome-based, and it meets not just the local and national manpower requirements, but also provides personal satisfaction and career potential for professionals with supporting pathways for their development. One of the major changes is the paradigm shift of the focus from traditional theoretical knowledge to one on skills- and competency-based education and training[24]. Optimal education/training requires that the student is able to integrate knowledge, skills and attitude in order to be able to perform a professional act adequately in a given situation. Thus the following curriculum has been designed accordingly in a prescriptive fashion, with an aim to standardize the content across the nation.

The student would follow the path of a diploma, a bachelors' and a masters' degree to practice in this field.

Entry requirements

It is recommended that the students entering this Program should have completed the recognized secondary school studies as the qualification stipulated for the Health Information Management program (diploma/degree), i.e. **10+2 or equivalent examination with PCB/PCMB** from a recognized university or board which would provide the foundation for and prepare them for higher education studies.

Program duration

It is recommended that any program developed from this curriculum should have a minimum of the following duration to qualify as an entry level program in Health Information Management –

- **2.5 year (5 semester) inclusive of six months of internship – Diploma level (2.5 Years)**
- **4 year (8 semester) B. Sc. Program inclusive of one year of internship/ Externship– Bachelor's degree level (4 years)**
- **2 year (4 semester) M. Sc. Program inclusive of 6 months of Professional practice/project work – Masters' degree level (2 years)**

Diploma to be phased out in another 3-5 years and upgraded to BSc program and exiting PG Diploma to be upgraded to MSc program. Initially, the academic content should emphasize on establishing a strong scientific basis and in the latter year, it should focus on the application of theory to clinical/reflective practice.

Teaching faculty and infrastructure

The importance of providing an adequate learning environment for the students cannot be over emphasized. Both the physical infrastructure and the teaching staff must be adequate. Teaching areas should facilitate different teaching methods. While students may share didactic lectures with other disciplines in large lecture theatres, smaller teaching areas should also be provided for tutorial and problem/case-based learning approaches. In all venues that accommodate students, health and safety standards must be adhered to. It is recommended that a faculty and student ratio of 1:10 be followed.

Exit Exam

A national exit test is proposed to be conducted for all BSc. HIM students in India. A student needs to pass the exam to get license and practice as a HIM professional in India. Admission to higher education may be considered based on the merit of the exit examination. The exit examination process shall be governed by the rules and regulations prescribed by the National Commission for Allied and Healthcare Professions (NCAHP).

Job availability

As per the ILO documentation, employers worldwide are not looking for job applicants who can only apply technical skills in the workplace, but for those who can also communicate effectively, including with customers; can work in teams, with good interpersonal skills; can solve problems; have good ICT skills; are willing and able to learn; and are flexible in their approach to work.[24]

Graduates can expect to be employed in hospitals as Health Information Management Technologists and Health Information Management Officers.

Chapter 4

Model Curriculum of Health Information Management Programs

Chapter 4: Model Curriculum

Background

Information is the life blood of health care delivery system. The medical record, in manual or automated form, houses the medical information that describes all aspects of patient care. Physicians, nurses, and other health care providers require medical information for treating a patient. The medical record serves as a communication link among care-givers. Documentation in the medical record also serves to protect the legal interests of the patient, health care provider, and health care facility. A Health Information Management (HIM) Professional is one of the key positions in a healthcare organization responsible for management of various health related information of patient generated within the healthcare system. HIM involves maintaining, collecting, analysing protecting and disseminating traditional and digital medical information essential for delivery of quality care. The World Health Organization stated that the proper collection, management and use of information within the healthcare systems will determine the system's effectiveness in detecting health problems, defining priorities, identifying innovative solutions and allocating resources to improve health outcomes.

The aim of the recommended curriculum is to produce HIM professionals who understand the**:**

- Definition and characteristics of good Health Information
- Values of 'Good' Medical Record/Health Information to various users
- Required Characteristics of entries in medical Records
- Responsibility for Medical Record/ Health Information Quality
- Application of IT in the management of clinical and healthcare data.
- Integration of digital health solutions for the better management and use of health information.

They should be able to manage:

- Evaluate knowledge of practice relevant to health information management.
- Work collaboratively with other health care professionals to achieve a quality service.
- Enable health care organizations for better management of patient information
- Support health care administrators in routine activities
- Apply the knowledge obtained in specialized areas effectively in the health care system.
- Use interpersonal skills to facilitate effective communication with various health care professionals
- Develop health information standards, according to the health care requirements
- Uphold legal, ethical standards of Health Information
- Utilization of data analytics, interoperability, and information governance to improve healthcare outcomes on a systemic level.

- Interoperability, population health analytics, and compliance with regulatory requirements to protect patient privacy and confidentiality.
- The benefits data science and artificial intelligence for predictive analytics, personalized medicine, and more effective population health management.

All aspects of Health Information Management have been considered in the development of this curriculum together with the identification of the roles expected for different levels of HIM professionals based on their qualification and experience. The need for connecting the dots between the education and employment practices has been the road map for devising this curriculum.

The National Curriculum Taskforce on Health Information Management has successfully designed the career and qualification map indicating the growth opportunities for a professional in the career pathway based on the level as indicated in the National Skills Qualification Framework (NSQF). The career pathway indicates the entry level after the completion of a minimum 2.5 years of diploma level Program, with internship (Diploma in Health Information Management) as well as the entry level after completion of a minimum 4 years of Baccalaureate level Program, with internship (B. Sc. in Health Information Management). The components of the programs starting from diploma and above has been detailed in the coming chapters.

A foundation course has also been designed to bring all the students at the same level of understanding with respect to basic healthcare related norms before the start of a career in a healthcare professional program. The foundation course is mandatory for all the allied health professional programs and for both entry level programs – diploma as well as degree. If a diploma holder has completed the foundation course and is willing to pursue the degree program, the candidate will directly get entry for next semester, however a pre- qualifier skill test will have to be satisfactorily completed, if not, then the candidate will have to undergo the first semester of foundation course again.

4.1 Diploma in Health Information Management

Diploma in Health Information Management

Introduction:

Objectives/aim of the program:

To develop competent Health Information Management professionals that can:

- Enable the health care organization to better manage patient information
- Support health care administrators in routine activities
- Apply the knowledge obtained on specialized areas effectively in the health care system
- Work collaboratively with other health care professionals to achieve a quality service

Eligibility for admission:

Selection procedure

1. He/she has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board with pass marks in Physics, Chemistry, Biology/Mathematics.
2. He/she has attained the age of 17 years as on - (current year) & maximum age limit is 30 years.
3. He/she has to furnish at the time of submission of application form, a certificate of Physical fitness from a registered medical practitioner and two references from persons other than relatives testifying to satisfactory general character.

Duration of the program

Duration of the program is of 2.5 years or 5 semesters (inclusive of six months of internship) with 1465 hours of Theory & 655 hours of Practical Classes and 720 hours dedicated for internship.

Total number of hours – 2840.

Stipend for the internship:

During the internship period a student shall be paid a minimum of INR 2000/- month. The stipend shall be payable to all students who are carrying out a internship at designated hospitals only.

Medium of instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the program.

Attendance:

A candidate will be permitted to appear for the University Examination for any semester if he / she secure not less than 80% of attendance (separately in theoretical and Practical) during the calendar year, failing which he / she should complete the number of days/hours and undergo the next semester/final examination conducted by the university.

A candidate has to secure minimum 80% in Skills training (practical) for qualifying to appear for the final examination. No relaxation, whatsoever, will be permissible to this rule under any ground including indisposition etc.

Model Curriculum Outline

First Semester

Sl. No.	Course Titles	Hours		
		Theory	Practical	Total
DHIM-001	Introduction to Healthcare Delivery System in India	60	0	60
DHIM-002	Basic computers and information Science	10	40	50
DHIM-003	Communication and soft skills	20	10	30
DHIM-004	Medical Terminology and record keeping	40	0	40
DHIM-005	Medical Law and Ethics	40	0	40
DHIM-006	Introduction to Quality and Patient safety	40	60	100
DHIM-007	Professionalism and values	20	0	20
DHIM-008	Research Methodology and Biostatistics	40	20	60
DHIM-009	Principals of Management	40	0	40
DHIM-010	Community orientation and clinical visit (including related practical to course 001)*	0	100	100
TOTAL		310	230	540

Teaching resources (tutors) should be made available at every institute for basic subjects such as – Biology and English for students who wish to undertake the extra classes for the same.

Second Semester

Sl. No.	Course Titles	Hours		
		Theory	Practical	Total
DHIM-011	**Health Information Management – I**	**80**	**20**	**100**
DHIM-012	**Anatomy, Physiology, & lab science**	**80**	**-**	**120**
DHIM-013	**General statistics & Biostatistics**	**50**	**25**	**75**
DHIM-014	**Communication skills**	**120**	**30**	**150**
DHIM-015	**Medical Terminology – II**	**75**	**20**	**95**
TOTAL		**405**	**95**	**500**

Third Semester

Sl. No.	Course Titles	Hours		
		Theory	Practical	Total
DHIM-016	International Classification of Diseases (ICD-10) and Surgical Procedures (ICD-9CM) and SNOMED-CT	170	110	280
DHIM-017	Health Information Management – II	100	70	170
DHIM-018	Special Lectures	90	-	90
TOTAL		360	180	540

Fourth Semester

Sl. No.	Course Titles	Hours		
		Theory	Practical	Total
DHIM-019	Computer Skills	150	80	230
DHIM-020	Hospital Organization & Administration	150	70	220
DHIM-021	Special Lectures	90	-	90
TOTAL		390	150	540

Fifth Semester

Sl. No.	Course Titles	Hours		
		Theory	Practical	Total
DHIM-022	Internship		720	720

First Semester

Foundation course

Introduction to National Healthcare System

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. Topics to be covered under the subject are as follows:

1. Introduction to healthcare delivery system
    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
2. National Health Program- Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Program.
3. Introduction to AYUSH system of medicine
    a. Introduction to Ayurveda.
    b. Yoga and Naturopathy
    c. Unani
    d. Siddha
    e. Homeopathy
    f. Need for integration of various system of medicine
4. Health scenario of India- past, present and future
5. Demography & Vital Statistics-
    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
6. Epidemiology
    a. Principles of Epidemiology
    b. Natural History of disease
    c. Methods of Epidemiological studies
    d. Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

Medical terminologies and record keeping

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.[22]Topics to be covered under the subject are as follows:

1. Derivation of medical terms.
2. Define word roots, prefixes, and suffixes.
3. Conventions for combined morphemes and the formation of plurals.
4. Basic medical terms.
5. Form medical terms utilizing roots, suffixes, prefixes, and combining roots.
6. Interpret basic medical abbreviations/symbols.
7. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.
8. Interpret medical orders/reports (Practical training to be included).
9. Data entry and management on electronic health record system.

Basic computers and information science

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. Topics to be covered under the subject are as follows:

Introduction to computer: **Introduction**, characteristics of computer, block diagram of computer, generations of computer, computer languages.

1. Input output devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).
2. Processor and memory: The Central Processing Unit (CPU), main memory.
3. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.
4. Introduction of windows: 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. Introduction to MS-Word: 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.
6. Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.

7. Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
8. Introduction of Operating System: introduction, operating system concepts, types of operating system.
9. Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.
10. Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.
11. Application of Computers in clinical settings.

Practical on fundamentals of computers -

1. Learning to use MS office: MS word, MS PowerPoint, MS Excel.
2. To install different software.
3. Data entry efficiency
4. Miscellaneous: Scanning of documents (of various sizes) and in different conditions (for e.g., mutilated), file naming, saving, uploading, etc. Copying of original medical document, back up of old data/ records.

Medical law and ethics

Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society's legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice.[23]

Medical ethics has developed into a well based discipline which acts as a "bridge" between theoretical bioethics and the bedside. The goal is "to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice".[27] Doctors are bound by, not just moral obligations, but also by laws and official regulations that form the legal framework to regulate medical practice. Hence, it is now a universal consensus that legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum. Few of the important and relevant topics that need to focus on are as follows:

1. Medical ethics - Definition - Goal - Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality
4. Malpractice and negligence - Rational and irrational drug therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill- Euthanasia

7. Organ transplantation
8. Medico legal aspects of Health Information Management – 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.
9. Professional Indemnity insurance policy
10. Development of standardized protocol to avoid near miss or sentinel events
11. Obtaining an informed consent.

Communication and soft skills

Major topics to be covered under Communication course[24] –

1. Basic Language Skills: Grammar and Usage.
2. Business Communication Skills. With focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.
3. Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.
4. Basic concepts & principles of good communication
5. Special characteristics of health communication
6. Types & process of communication
7. Barriers of communication & how to overcome

Introduction to Quality and patient safety

1. Quality assurance and management - 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.
    a. Concepts of Quality of Care
    b. Quality Improvement Approaches
    c. Standards and Norms
    d. Quality Improvement Tools
    e. Introduction to NABH guidelines

2. Basics of emergency care and life support skills - Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows:

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

At the end of this topic, focus should be to teach the students to perform the maneuvers in simulation lab and to test their skills with focus on airways management and chest compressions. At the end of the foundation course, each student should be able to perform and execute/operate on the above mentioned modalities.

3. Bio medical waste management and environment safety- The aim of this section will be to help prevent harm to workers, property, the environment and the general public. Topics to be covered under the subject are as follows:
    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 waste
    e. BMW Management & methods of disinfection
    f. Modern technology for handling BMW
    g. Use of Personal protective equipment (PPE)
    h. Monitoring & controlling of cross infection (Protective devices)

4. Infection prevention and control - The objective of this section will be 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. Concepts taught should include –
    a. Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)],
    b. Prevention & control of common healthcare associated infections,
    c. Components of an effective infection control program, and
    d. Guidelines (NABH and JCI) for Hospital Infection Control

5. Antibiotic Resistance-
    a. History of Antibiotics
    b. How Resistance Happens and Spreads
    c. Types of resistance- Intrinsic, Acquired, Passive
    d. Trends in Drug Resistance
    e. Actions to Fight Resistance
    f. Bacterial persistence

g. Antibiotic sensitivity
h. Consequences of antibiotic resistance
i. Antimicrobial Stewardship- Barriers and opportunities, Tools and models in hospitals

6. Disaster preparedness and management- The objective of this section will be to provide knowledge on the principles of on-site disaster management. Concepts to be taught should include-
    a. Fundamentals of emergency management,
    b. Psychological impact management,
    c. Resource management,
    d. Preparedness and risk reduction,
    e. Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.

Professionalism and Values

The course 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.

1. Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality
2. Personal values- ethical or moral values
3. Attitude and behavior- professional behavior, treating people equally
4. Code of conduct , professional accountability and responsibility, misconduct
5. Differences between professions and importance of team efforts
6. Cultural issues in the healthcare environment

Research Methodology and Biostatistics

The objective of this is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings.

1. Introduction to research methods
2. Identifying research problem
3. Ethical issues in research
4. Research design
5. Basic Concepts of Biostatistics
6. Types of Data
7. Research tools and Data collection methods
8. Sampling methods
9. Developing a research proposal

Principals of Management

The course is intended to provide a knowledge about the basic principles of Management.

1. Introduction to management
2. Strategic Management
3. Foundations of Planning
4. Planning Tools and Techniques
5. Decision Making, conflict and stress management
6. Managing Change and Innovation
7. Understanding Groups and Teams
8. Leadership
9. Time Management
10. Cost and efficiency

Community orientation and clinical visit

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 under-graduate 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. [25]

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.
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.
3. Clinical visit to their respective professional department within the hospital.

Second Semester

Health Information Management – I:

I. Characteristics of quality Health Information Management:

- Definition, Characteristics of 'Good' Medical Record
- Values of 'Good' Medical Record to various users
- Required Characteristics of entries in medical Records
- Source-oriented, Problem-oriented, and Integrated medical records
- Medical Record Forms and their Content
- Standard Order of Arrangement of Medical Record forms
- Analysis of Medical Record-Quantitative & Qualitative
- Incomplete Record Control
- Practical: Actual handling of medical records

II. Medical Records for different patient encounters with health care facility

- Ambulatory Care Records {Emergency & Outpatient Records]
- Clinical Records in Long Term Care and Rehabilitation Facilities
- Mental Health Records

III. Filing Methods, Storage, and Retention

- Numbering and Filing Systems
- Filing
- Storage- Microfilming and Disk Storage
- Retention
- Registers & Indexes
- Record movement control & Tracking system

IV. Organizational Aspects of Health Information Management Department/Services

- Policies
- Functions
- Location, Space and Layout
- Equipment
- Forms Designing and Control
- Medical Records Flow and Processing

V. Organizational Aspects of the Centralized Admitting Services

- Principles of Identification of a Patient
- Methods of Collection of Identification Data
- Types of Central Admitting Services
- Admitting Policies
- Procedure Outlines for Admissions

- Flow of Records following Admissions
- Advantages of good Admitting Policies and Procedures
- Pre-requisites for smooth & efficient functioning of the Centralized Admitting Services

VI. Medical Record Department Management

- Planning, Organizing, Directing and Controlling
- Personnel
- Principal Responsibilities and Duties of the Medical Record Administrator/Director
- Tools of Management in the Hands of the Medical Record Administrator/Director

VII. Intradepartmental and Interdepartmental Relationships

- Developing Intradepartmental Relationship
- Developing Interdepartmental Relationships with various Departments of the Hospital

VIII. Quality Management

- External and Internal Pressures for quality
- Quality Assessment and Quality Improvement
- Quality Assurance & Medical Care Evaluation
- Utilization management
- Peer Review
- Utilization review processing & outcomes of Utilization management
- Risk management program [Organization & Operation
- International Standards Organization [ISO], Quality Council of India, & National Accreditation Board of Hospitals [NABH]

IX. Heath Care Statistics, Quality control of Data Collection & Presentation

- Incomplete Record Control
- Inpatient census and rates computed from it.
- Ambulatory care statistics
- Long term Care Statistics
- Processing and reporting of Reproductive Health Statistics
- Reporting of Notifiable Diseases to Public Health Authorities

X. Medico-Legal Aspects of Health Information Management

- Medical Ethics, Hippocratic Oath, and Code of Ethics for the HIM Professionals
- Ownership of the Medical Record
- Privileged Communication and confidentiality of Medical Records
- Release of Information: To the Patient, To Authorized Persons /Agencies Legal Implications of release of Information to unauthorized, Persons/Agencies.
- Consents: Different types and their validity, invalidity blanket, and improper consents.

- Corrections in identification data medical documentations
- Rights and responsibilities of patients
- Medical Record in a Court of Law
- Legal requirements in Retention of Medical Records

Anatomy, Physiology, & lab science:

Understand the technical functions of various organs and systems of the body
Acquire knowledge about various body fluids, hormones and enzymes Topics Covered:

- Integumentary system,
- Musculoskeletal system,
- Respiratory system,
- Cardiovascular system,
- Blood and lymphatic system,
- Digestive system,
- Urogenital systems
- Nervous system,
- Organs of special sense.

General statistics & Biostatistics:

General Bio-statistics

- Definition of Statistics and Biostatistics
- Frequency Distribution: Measures of Central Tendency – Arithmetic Mean, Median and Mode for un-grouped and grouped data
- Presentation of data: Bar diagram, Pie Diagram, Histogram, Frequency polygon, Frequency curve, and Line diagram.
- Measures of Variation: Range, Inter Quartiles, Mean Deviation, Standard Deviation Co-efficient of Variation
- Probability: Definitions of Classical Probability (Priori) and Frequency, Probability (Posteriori), Addition and Multiplicative Theorems of Probability
- Probability Distribution: Binomial distribution, Poisson distribution and Normal distribution
- Sampling- Definition: Population and simple Sampling, Simple Random Sampling, Stratified Random Sampling, Systematic Random Sampling and Cluster Sampling
- Correlation and Regression: Scatter Diagram, Linear Correlation and Linear Regression Equation Test of Significance – Procedure Test of Significance for large samples and for small samples Chi-square Test – Testing for association Misuse of Chi-square Test

Hospital Statistics

- Definition of hospital statistics and important Hospital Terms
- Sources of Hospital Statistics – Registers, Medical Records and Daily Ward Census
- Analysis of Hospital Services and Discharges ¬ Important Rates, Ratio and Percentages with Formula
- Uses and Limitations of Hospital Statistics
- Hospital Statistics Reporting
- Practical: Hands-on training in hospital statistics – collection and analysis

Communication skills:

- Basics of Communication: Process of and models of communications,
- Types of communications: a). Oral communication b). Written Communication c). Non-verbal communication & Body language, Barriers to communications
- Reading Skills: ¬Types of readings: Skimming, Scanning, intensive / loud / silent reading, map reading ¬ Sample passages for reading with comprehension exercises ¬ Tables and Graphic Organizers
- Listening skills ¬ Definition of listening ¬Types of Listening ¬ Purposes of listening ¬ Obstacles for listening ¬Contexts of listening ¬To be a good listener ¬ Listening to a Lecture
- Speaking Skills: Formal & Informal Conversation: Agreeing, Emphasizing, thinking ahead, correcting oneself, interrupting, politely expressing reservations, opinions, disagreeing, accepting invitations declining invitations etc. Telephone Conversation and Interviews

Medical Terminology – II:

I. Introduction to Medical Terminology

1. Definition and Origin of Medical Terms.
2. Components of Medical Terms
3. Prefixes
4. Suffixes
5. Roots and Combining forms
6. External Anatomy and Internal Anatomy
7. Additional Lists and their combining forms grouped as: Verbs, Adjectives, Body Fluids, Body Substances, Chemicals, Colours and Phobias

II. Terms Relating to the Body as a Whole

1. Study of the Body
2. Basic Structures
3. Cells
4. Tissues
5. Organs
6. Systems
7. Directions
8. Anatomic Planes and Position

III. The Skeletal System

1. Pathologic conditions (Inflammations and Infections)
2. Hereditary, Congenital and Developmental Disorders
3. Fractures
4. Metabolic and Deficiency Diseases
5. Symptomatic Terms
6. Diagnostic Terms
7. Oncology Terms
8. Operative Terms
9. Laboratory Tests and Procedures
10. Standard Abbreviations

IV. The Muscular System

1. Pathologic Conditions
2. Degenerative and Innervative Disorders
3. Hereditary, Congenital and Developmental Disorders
4. Symptomatic Terms
5. Diagnostic Terms
6. Oncology Terms
7. Operative Terms
8. Laboratory Tests and Procedures.
9. Standard Abbreviations

Third Semester

International Classification of Diseases (ICD-10) and Surgical Procedures (ICD-9CM) and SNOMED-CT:

- Coding of final diagnosis and secondary diagnosis.
- Disease and operation nomenclatures, International Classification of Disease 10, International Classification of Disease – 9CM indexing of patient care data.
- Introduction and usage of International Classification of Disease in practicals
- International Classification of Diseases
- ICD-10, ICD-9 CM (Surgical Procedures)
- CPT – Current Procedural Terminology (Introduction)
- HCPCS – Healthcare Common Procedure Coding System (Introduction)
- ICD-10 - Alpha-numeric coding
- Volume 1 – Tabular list
- Volume 2 – Instruction manual
- Volume 3 – Alphabetical Index
- Classification of Diseases according to Clinical Pertinence
- ICD-9CM (Procedure) coding – International Classification of Diseases – Clinical modification
- CPT – Introduction of CPT and HCPCS – 3 levels of codes
- SNOMED-CT

Health Information Management – II:

Health Information Management serves the healthcare industry and the public by managing, analyzing, and utilizing the data vital for patient care and making the data accessible to healthcare providers. Enhancing individual patient care through timely and relevant information is one of the primary goals for the Health Information Management Technology.

1. Development of Health Care Information
   - Health Care Information standards, Paper based Health Records, Computer based patient records, Ethical issues in Health Information Management
2. Comparative data
   - Research methods, Clinical quality management
3. Management of Health Information Services
   - Principles of Management and Leadership, Work Design and Performance improved, Human Resources Management, Training and Development, Project Management, Strategic Management.

Special Lectures:

Medical Language & Classification Systems

Subject expose student to the healthcare vocabularies and also the representation of clinical data through the use of medical vocabularies and clinical classification systems. Emphasis is on developing expertise in identifying appropriate clinical classification systems and medical vocabularies, identifying their appropriate uses and sources, and applying them within and among health information systems to promote effective communication. Standard clinical terminologies including SNOMED, ICD 10, ICD-9-CM, ICD-10-CM, and ICD-9-PCS, ICPM, CPT/HCPCS, National Drug Codes and healthcare vocabularies and clinical terminologies in the electronic health record.

Change Leadership

Develop a systems-based way of thinking about leadership and how people function in the workplace, self-assess leadership thinking and behavior, establish goals for a higher level of leadership functioning, and integrate System-based Leadership and Change Management with models of change management and transition. Also, identify patterns of behavior that sabotage change in your system and internalize behavior for leading change in the organization.

Standard documentation Practices & Implementation

Subject covers components of EHR implementation as identified through case studies of best practices. Examine how the EHR impacts patient care through the availability of information and clinical decision support, create and use rules and clinical protocols/tools for the EHR, and develop training methodologies.

Fourth Semester

Computer Skills:

1. The Internet

- Define the Internet
- How the Internet works
- Internet capabilities and limitations
- How to connect to the Internet via modem.
- Navigate the World Wide Web
- Identify services and tools offered on the Internet
- Use services and tools offered on the Internet
- Explain book marks
- Safety

2. Email

- Define electronic mail
- Compose electronic messages
- Send electronic messages using appropriate format
- Transmit document using electronic mail system

3. Basic knowledge of networks

- Explain communications standards
- Describe network structures
- Explain network types and protocols
- Explain network connectivity
- Explain the function of servers in a graphic network
- Describe various network operating systems
- Explain the difference between network software and individual use software
- Use a network to access, file, and store files

4. Information processing activities

- Key, process, print and store text and data information using integrated software
- Troubleshoot basic computer malfunctions
- Load media devices
- Set up print devices
- Operate scanner devices
- Operate Print devices
- Maintain print devices
- Monitor peripheral equipment operations

5. Operating Systems

- Identify operating systems and their attributes (i.e., Unix, Macintosh, Windows)
- Identify the advantages and disadvantages of the computer to individuals and business.
- Identify the roles and equipment used for input, processing, and output in an information system.
- Identify correct safety procedures

6. Demonstrate basic computer literacy

- Create directories/folders and sub-directories
- Format disks
- Manipulate files (copy, rename, delete)
- Keyboard proficiently by touch

Hospital Organization & Administration:

1. Introduction to Hospital Administration
   a) Who's Who in hospital – Key administrators and their functions, overview of medical and para-medical specialties, main service departments:
   b) Overview of health services – government services: private & not for profit: primary, secondary & tertiary health care: types of hospital: community, super-specialty etc.
2. Principles of Organizational Management
   a) Culture, Values and Mission
   b) Organizational Structure
   c) Planning and Controlling
   d) Hospital Organizational Structures – Government, Private and Not for Profit.
3. Managing People (Human Resources)
   a) Overview – scope and functions of HR dept., HR planning
   b) Recruitment and Appointment
   c) Training and Development
   d) Goal setting, rewards systems and motivation
   e) Performance Appraisal
   f) Promotion, internal transfers
   g) Problems and Legal issues
   h) Leadership
   i) Working in teams

4. Clinical Services
    a) Overview of clinical departments and services – OPD, In-patients, ICU, Surgical, Emergency, Community/family Health, Paramedical & Rehabilitation
    b) Types of doctors, their training, roles and responsibilities
    c) The role & responsibilities of the HOD
    d) Medical Audit
    e) Medical Negligence & Litigation
5. Nursing Services and Wards
    a) Objectives of the nursing service
    b) Nursing service organization, types of nurses, their training, qualifications and functions, other ward staff, personnel issues.
    c) Ward management
6. Product-based services
    a) Pharmacy purchasing and stores
    b) Pharmacy dispensing
    c) Prosthetics & Orthotics
7. Diagnostic Services (Radiology, Laboratories, Blood Bank etc.)
    a) Overview – main services and their functions
    b) In-house services
8. Patient Services (non-medical)
    a) Reception, Welcome/Help Desk
    b) Patient facilities, wheelchairs, Ambulances
    c) Public Relations – objectives, functions, policies, different media, methodologies, networking
9. Managing Support Services
    a) Overview of functions of all support services including Laundry, Catering, Cleaning, CSSD, Transport, Security, Materials (Purchase and Stores) etc.
    b) Functions of general service Office
10. Hospital Infrastructure (Buildings and Plant)
    a) Civil Engineering – Planning and maintaining buildings, water & sewage
    b) Electrical Engineering
    c) Mechanical Engineering, Equipment Maintenance, Medical Gases, etc.
    d) Biomedical Engineering
11. Hospital Information Systems
    a) Analysing information requirements
    b) Reporting systems
    c) Early warning systems
    d) Computerized Systems, intranet
12. Managing the Organization (putting it all together)
    a) Planning: strategy and corporate planning
    b) Dealing with risk and uncertainty
    c) Organizational Development and Change management
    d) Corporate Governance & legal matters
    e) Relationships with other institutions and organizations

Special Lectures:

Quality Management in Health Services (Quality Assurance in healthcare)

Subject covers diverse perspectives in quality management and regulation including relevant research and management methodologies of quality, cost and access to healthcare with a focus on the role of health information management. Overview of performance improvement, methods and applications in the area of outcomes research including practice variation, risk adjustment, quality measures and quality management (or quality improvement), practice guidelines, evidence-based medicine, clinical decision support, health-related quality of life, utility assessment, economic evaluations (including cost- effectiveness studies).

Legal Issues in Health Information Technology and Systems

Examination of legal issues related to electronic-based health information; the growth of computer and communication technologies, including privacy, security, electronic data interchange and compliance related issues; policy, regulatory and related concerns; interpretation and implementation of enterprise information policy. Principles of law applied to the health field with emphasis on federal, state, and local laws affecting health information management practice, confidentiality, and security of information.

Leadership for Health Information Technology and Systems

Strategic management and planning, change management, leadership in e-health environment, project management including planning, scheduling, monitoring and reporting, process modeling. This course builds on the foundations of health information management or other professional preparation. Discussion of implementation of electronic health record systems, systems analysis from the enterprise level will be the focus of the class. Students are expected to develop a systems-thinking approach to leading health IT projects.

Fifth Semester

Internship:

The internship will span 6 months/ 1 semester.
As a part of this, the students will choose a relevant subject and prepare an in-depth project report of not less than 1000 words which will be handed over to the supervisor or trainer. The report can include objective, scope of the project and an in-depth report.

Professional Competencies

Professional Conduct

Professional conduct is of utmost importance for individuals pursuing a Diploma in Health Information Management (HIM). As HIM professionals, they are entrusted with the responsibility of managing and safeguarding sensitive patient health information. Professional conduct in this field entails adhering to ethical standards, maintaining strict confidentiality, and demonstrating integrity in all aspects of their work. They must handle patient data with utmost care, ensuring its accuracy, privacy, and security. HIM professionals should also exhibit professionalism in their interactions, communicate effectively, and collaborate with interdisciplinary teams. They should stay updated with the evolving healthcare landscape, comply with relevant regulations, and actively engage in continuous education to enhance their knowledge and skills. By upholding these principles of professional conduct, individuals pursuing a Diploma in Health Information Management can contribute to the effective management and protection of health information, ultimately supporting quality healthcare delivery.

Provide Description / required tools:

Performance Criteria	Indicators		
	Knowledge	Skill	Behaviors
Demonstrate a thorough understanding of the principles, concepts, and theories of health information management, including healthcare data management, medical coding and classification systems, health information technologies, privacy and security regulations, and healthcare reimbursement methods.	1. Understanding of the principles and concepts of health information management 2. Knowledge of healthcare data management, including data collection, storage, and retrieval methods 3. Familiarity with medical coding and classification systems, such as ICD, CPT, ICPM, ICD-Oncology, DSM-III etc. 4. Knowledge of health information technologies, including electronic health record systems and health information exchange	1. Ability to effectively manage healthcare data, including data collection, organization, and analysis. 2. Proficiency in medical coding and classification systems to assign accurate codes for diagnoses, procedures, and services. 3. Competence in using health information technologies and electronic health record systems. 4. Skill in ensuring compliance with privacy and security regulations and implementing appropriate safeguards for health information.	1. Demonstrating a commitment to continuous learning and staying updated with emerging trends and advancements in health information management 2. Adhering to professional ethics and maintaining confidentiality and privacy of health information 3. Collaborating effectively with healthcare professionals, patients, and other stakeholders 4. Demonstrating attention to detail and accuracy in managing health information

	5. Understanding of privacy and security regulations, and their implications for health information management 6. Knowledge of healthcare reimbursement methods and their impact on health information management	5. Ability to analyze healthcare reimbursement methods and their implications for health information management	5. Applying critical thinking and problem-solving skills to address challenges related to health information management
Gather, organize, and analyze healthcare data using appropriate tools and techniques.	1. Understanding of healthcare data sources and collection methods 2. Knowledge of data standards and terminology used in healthcare. 3. Familiarity with data validation and quality assurance techniques 4. Understanding of data management principles and best practices	1. Proficiency in data collection methods, such as data abstraction from medical records or electronic health records 2. Ability to organize and structure healthcare data in a meaningful and logical manner. 3. Competence in using data management tools and software applications for data organization and storage. 4. Skill in data analysis techniques, including statistical analysis, data visualization, and reporting.	1. Attention to detail and accuracy in collecting and organizing healthcare data. 2. Effective time management skills to ensure timely and efficient data gathering and organization. 3. Collaboration and teamwork to work with healthcare professionals and stakeholders involved in data collection. 4. Commitment to maintaining data privacy and confidentiality throughout the data handling process.

	5. Knowledge of data analysis techniques, including statistical analysis and data modeling	5. Ability to identify and address data quality issues through validation and verification processes	5. Critical thinking and problem-solving skills to identify data analysis needs and select appropriate tools and techniques
Utilize health information systems and electronic health record (EHR) platforms effectively.	1. Understanding of health information systems and their components 2. Knowledge of electronic health record (EHR) platforms and their functionalities 3. Familiarity with health information exchange standards and interoperability 4. Understanding of data security and privacy requirements in health information systems 5. Knowledge of health informatics principles and practices	1. Proficiency in navigating and using different health information systems and EHR platforms. 2. Ability to input, retrieve, and update patient information in EHR systems accurately and efficiently. 3. Competence in utilizing health information exchange methods and protocols. 4. Skill in troubleshooting and resolving basic technical issues related to health information systems. 5. Ability to collaborate and communicate effectively with IT professionals and system administrators for system implementation and maintenance	1. Adhering to professional ethics and maintaining patient confidentiality and privacy when accessing and using health information systems 2. Attention to detail and accuracy in entering and managing patient data in EHR platforms. 3. Effective time management skills to ensure efficient utilization of health information systems. 4. Collaboration and teamwork to effectively communicate and coordinate with healthcare professionals and stakeholders using health information systems. 5. Continuous learning and adaptability to keep up with advancements in health information systems and technology

Apply knowledge of coding systems such as International Classification of Diseases (ICD), Current Procedural Terminology (CPT), and Healthcare Common Procedure Coding System (HCPCS) to accurately assign codes to diagnoses, procedures, and services for proper reimbursement and healthcare data analysis.	1. Understanding of the structure and purpose of coding systems such as ICD, CPT, and HCPCS. 2. Knowledge of coding guidelines and conventions specific to each coding system. 3. Familiarity with medical terminology, anatomy, and physiology to accurately assign codes. 4. Understanding of coding classifications and categories for diagnoses, procedures, and services. 5. Knowledge of coding compliance and regulatory requirements.	1. Proficiency in assigning accurate codes for diagnoses, procedures, and services using ICD, CPT, ICPM, ICD-Oncology, DSM-III etc. 2. Coding systems. 3. Ability to interpret and apply coding guidelines and conventions correctly. 4. Competence in using coding references and software tools to support accurate coding. 5. Skill in reviewing medical documentation and extracting relevant information for coding purposes. 6. Ability to identify and resolve coding discrepancies or documentation gaps.	1. Adhering to professional ethics and maintaining confidentiality when working with patient health information during coding processes. 2. Attention to detail and accuracy in assigning codes to ensure proper reimbursement and data analysis. 3. Effective time management skills to meet coding deadlines and productivity targets. 4. Collaboration and communication with healthcare professionals and coding team members to clarify documentation or coding queries. 5. Continuous learning and staying updated with coding updates, regulations, and industry best practices.

Understand and adhere to legal and ethical principles related to health information privacy and security.	1. Understanding of legal and ethical principles related to health information privacy and security, including relevant laws and regulations such as HIPAA. 2. Knowledge of data governance and stewardship principles in healthcare organizations. 3. Familiarity with security measures and best practices for protecting health information. 4. Understanding of statistical analysis methods and techniques used in health information management. 5. Knowledge of data reporting standards and requirements in healthcare.	1. Ability to apply legal and ethical principles to ensure compliance with privacy and security regulations. 2. Competence in implementing appropriate safeguards to protect health information from unauthorized access or disclosure. 3. Proficiency in data analysis techniques, including data cleansing, aggregation, and statistical analysis. 4. Skill in using data analysis software and tools to generate reports and statistical summaries. 5. Ability to interpret and communicate meaningful insights derived from health information data.	1. Adhering to professional ethics and maintaining confidentiality and privacy of health information. 2. Attention to detail and accuracy in handling health information data to ensure data integrity. 3. Collaboration and teamwork in working with healthcare professionals and stakeholders to understand their data analysis needs. 4. Effective communication and presentation skills to convey findings and insights derived from health information data. 5. Commitment to continuous learning and staying updated with advancements in privacy, security, and data analysis in healthcare.

Analyze health information data to generate reports, statistical summaries, and meaningful insights that support decision-making processes in healthcare organizations.	1. Understanding of data analysis principles and techniques used in healthcare. 2. Knowledge of statistical methods and tools commonly used in health information management. 3. Familiarity with data visualization techniques to present information effectively. 4. Understanding of healthcare terminology and concepts to interpret and analyze health information data. 5. Knowledge of relevant regulations and standards for data analysis and reporting in healthcare.	1. Proficiency in using data analysis software and tools to manipulate and analyze health information data. 2. Ability to extract, transform, and load data from various sources for analysis. 3. Competence in applying statistical methods to identify patterns, trends, and correlations in health information data. 4. Skill in generating reports, statistical summaries, and visualizations that effectively communicate findings. 5. Ability to interpret and draw meaningful insights from health information data.	1. Attention to detail and accuracy in data analysis to ensure the integrity and reliability of findings. 2. Adhering to professional ethics and maintaining confidentiality and privacy of health information during analysis. 3. Collaboration and teamwork to work with healthcare professionals and stakeholders to understand their data analysis needs. 4. Effective communication skills to present and explain findings to diverse audiences. 5. Commitment to continuous learning and staying updated with advancements in data analysis techniques and tools in healthcare.

Demonstrate professionalism, effective communication, and interpersonal skills in working with healthcare professionals, patients, and other stakeholders.	1. Understanding of professional ethics and standards in healthcare and health information management. 2. Knowledge of effective communication techniques and strategies. 3. Familiarity with healthcare organizational structures and roles of different stakeholders. 4. Understanding of patient-centered care principles and the importance of patient engagement	1. Proficiency in verbal and written communication to effectively convey information and collaborate with healthcare professionals, patients, and stakeholders. 2. Ability to adapt communication style to different audiences and contexts. 3. Competence in active listening to understand and respond to the needs of healthcare professionals, patients, and stakeholders. 4. Skill in conflict resolution and problem-solving to address any challenges that may arise during interactions. 5. Ability to build rapport and establish positive relationships with healthcare professionals, patients, and stakeholders.	1. Demonstrating professionalism and ethical behavior in all interactions. 2. Respectful and empathetic communication with healthcare professionals, patients, and stakeholders. 3. Collaboration and teamwork to effectively work with interdisciplinary healthcare teams. 4. Cultural sensitivity and awareness to address diverse needs and perspectives. 5. Maintaining confidentiality and privacy of health information and adhering to data protection regulations.

4.2 Bachelor of Science in Health Information Management (B.Sc. HIM) Curriculum

B. Sc. in Health Information Management

Introduction:

Objectives/aim of the program:

The program is designed to acquire sufficient knowledge of the prevailing system of scientific documentation with computerization, information search and retrieval; to get familiar with large databases dealing with various entities such as diseases, pathological conditions, symptoms, drugs & concepts such as data mining; to learn the classification & codification of drugs, diseases & their treatment; to acquire knowledge of the current trends in Health Information Management like health insurance, third party payers and document scanning etc.

Expectation from the future graduate in the providing patient care:
On completion of this program, the students will be able to:

- Evaluate knowledge of practice relevant to health information management.
- Use formal research as a tool to evaluate and develop practice.
- Identify his/her professional learning and developmental needs.
- Work collaboratively with other health care professionals to achieve a quality service.
- Enable health care organization for better management of patient information
- Support health care administrators in routine activities
- Apply the knowledge obtained on specialized areas effectively in the health care system.
- Use interpersonal skills to facilitate effective communication with various health care professionals
- Develop health information standards according to the health care requirements
- Apply analytical and reflective skills to evaluate and improvise professional practice.
- Uphold legal ethical standards within his/ her profession

Eligibility for admission:

Pass in 12th class of 10 +2 of CBSE or equivalent with minimum aggregate of 55% marks in physics**,** chemistry and biology provided the candidate has passed in each subject separately. A candidate also must have passed in English (Core or selective or functional) as a subject of studies in the qualifying examination.
OR

Diploma in Health Information Management after Pass in 12th class of 10 +2 of CBSE or equivalent with minimum aggregate of 50% marks in physics chemistry and biology provided the candidate has passed in each subject separately. A candidate also must have passed in English (CORE or selective or functional) as a subject of studies in the qualifying examination.
OR

Candidates with two years diploma from a recognized Government Board in a subject for which the candidate desires to enroll, in the respective Allied Health Sciences program and shall have passed plus 12 [10+2] with Physics, Chemistry and Biology, as principal subjects or candidates with 3 years diploma from a recognized Government Board in a subject for which the candidate desires to enroll, in the respective Allied Health Sciences program & should have studied Physics, Biology and Chemistry as principal subjects during the tenure of the program.

Selection procedure

1. Admission to B.Sc. Health Information Management program shall be made on the basis of eligibility and an entrance Test to be conducted for the purpose. No candidate will be admitted on any ground unless he/she has appeared in the admission test and interview.
2. Successful candidates on the basis of written Test will be called for the interview & shall have face an interview board. The interview board will include the Head of the Department of Health Information Management and Head of the Institution, whose recommendations shall be final for the selection of the students.
3. During subsequent counseling (s) the seat will be allotted as per the merit of the candidate depending on the availability of seats on that particular day.
4. Candidate who fails to attend the Medical Examination on the notified date(s) will forfeit the claim for admission and placement in the waiting list except permitted by the competent authority under special circumstances.
5. The name of the student(s) who remain(s) absent from classes for more than 15 days at a stretch after joining the said program will be struck off from the college rolls without giving any notice.

Provision of Lateral Entry:

Lateral entry to second year for allied health science program for candidates who have passed diploma program from the Government Boards and recognized by State/Central University, fulfilling the conditions specified and these students are eligible to take admission on lateral entry system only in the same subject studied at diploma level

Duration of the program

Duration of the program: 3 academic years or 6 semesters of total duration of 2700 hours (1620 hours of Theory, 1080 hours of practical/clinical posting) and 2000 hours of compulsory internship.

Total hours – 4700

Medium of instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the program.

Attendance:

- No candidate shall be permitted to appear for any one of the parts of BSc. HIM degree program examinations, unless he/ she has attended the classes in the subject for the prescribed period in an affiliated Institution recognized by this University and produces the necessary certificate of study, attendance, satisfactory conduct and progress from the Head of the Institution.
- A candidate is required to put in a minimum of 75% of attendance in both theory papers and 90% practical separately in each subject before admission to the examination. This relaxation in attendance includes for medical & any other reasons approved by the head of the Institution.
- A candidate lacking in the prescribed attendance and progress in any one of the subjects in theory and practical in the first appearance shall not be permitted for admission to the entire examination.

Assessment:

Marks Qualifying for a Pass

Pass in a course will be reflected as grades. No candidate shall be declared to have passed in any course unless he/she obtains not less than **"E" grade**

For core courses (theory / practical), candidate should obtain a minimum of 50% (IAC + ESE or as applicable to course) to be declared as pass.

For non-core including psychology, pre and para clinical course, a candidate should secure a minimum of 40% in ESE to be declared as pass.

For students who fail to secure a minimum of 'E' grade for a course, an improvement examination is conducted to improve their IAC marks. The student can appear for these examinations along with the subsequent batches' mid semester / sessional exams. The marks obtained in other components of IAC can be carried forward without reassessment.

Evaluation & Grading system criteria

Evaluation & grading **(Manual Relative grading)** of students shall be based on **GPA** (Grade point average) & **CGPA** (Cumulative grade point average).

The overall performance of a student in each semester is indicated by the Grade Point Average (GPA). The overall performance of the student for the entire program is indicated by the Cumulative Grade Point Average (CGPA).

Evaluation weightage

The final evaluation and grading for each subject shall be based on internal assessment components (50 percent weightage) and semester end examination (50 percent weightage) conducted by the University.

Weightage distribution

Item	Weightage (%)
Class participation/presentation	20%
Assignment & quizzes	10%
Sessional exams	20%
Semester end University exam	50%
Total	100%

Letter Grading System

Letter Grade	Credit value (Grade Value)
A+	**10**
A	**9**
B	**8**
C	**7**
D	**6**
E	**5**
F	**0**

Calculation of GPA & CGPA: An example is provided

Course code	Course	Credits (a)	Grade obtainedby the student	Credit value (b)	Grade Points(a x b)
BH 01	Course - 1	4	E	6	24
BH 02	Course - 2	4	B	8	32
BH 03	Course - 3	3	A+	10	30
BH 04	Course - 4	4	C	7	28
BH 05	Course - 5	5	A	9	45
TOTAL		**20**	**-**	**-**	**159**

1st Semester GPA = Total grade points/total credits (159/20) = 7.95

Suppose in **2nd semester GPA** = **7** with respective course credit 22

Then 1st year CGPA = (7.95 x 20) + (7 x 22) / 20 + 22 = 7.1

Progression Criteria to higher semesters

The eligibility for promotion to the next academic year is subject to securing the minimum academic performance as specified below:

- First to second year: a minimum of 70% of the credits at the end of the first year (includes first and second semester)
- Second to third year: a cumulative minimum of 80% of the credits at the end of the second year (includes first, second, third and fourth semester)
- Third year to Internship/group project: Student will be eligible for internship/ group project only after successful completion of the entire course work, i.e. 100% credits to be accrued by the end of the third year.

The student must complete all the course work requirements by a **maximum ofdouble the program duration**. For e.g. 4 years' program, all the academic course work needs to be completed within 8 years. Failure to do so will result in exit from the program.

Credit Details:
Lectures: 1 hour/week = 1 Credit
Tutorials: 1 hour/week = 1 Credit
Practical: 2 hours/week = 1 Credit
Project: 30hours/week = 1 Credit
Credit Includes: L – Lectures, T- Tutorials, P- Practical, and PR – Project.

Undergraduate Program Requirements - Credits
A minimum of 170 credits are required for the B. Sc. in Health Information Management program of 4 years duration inclusive of one-year internship/externship.

Model Curriculum Outline

First Semester

Course Code	Course Title	Credits Distribution (L, T & P are hours/week)				Marks
		L	T	P	C	Total
BHIM-01	Anatomy	2	1	-	3	100
BHIM-02	Physiology	2	1	-	3	100
BHIM-03	Fundamentals of IT	1	-	2	2	100
BHIM-04	Medical ethics & professional values	2	1	-	3	100
BHIM-05	Communication Skills	3	1	-	4	100
BHIM-06	Foundations of Health Information Management	3	1	-	4	100
BHIM-07	Introduction to the healthcare delivery system	2	1	-	3	100
	Total	**15**	**6**	**2**	**22**	**700**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC).						

Second Semester

Course Code	Course Title	Credits Distribution (L, T & P are hours/week)				Marks
		L	T	P	C	Total
BHIM-08	Basics of Pharmacology	2	-	-	2	100
BHIM-09	Microbiology & Pathology	2	-	-	2	100
BHIM-10	General Psychology	2	1	-	3	100
BHIM-11	Environmental Sciences & Indian Constitution	2	1	-	2	100
BHIM-12	Medical Terminology – I	3	1	-	4	100
BHIM-13	Database Management System	3	1	-	3	100
BHIM-14	HIM Practicum – I	-	-	8	4	100
	Total	**14**	**4**	**8**	**20**	**700**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC).						

Third Semester

Course Code	Course Title	Credits Distribution (L, T & P are hours/week)				Marks
		L	T	P	C	Total
BHIM-15	Foundations of Management	2	-	-	2	100
BHIM-16	Medical Terminology - II	3	1	-	4	100
BHIM-17	Health Information Management Systems	2	1	-	3	100
BHIM-18	Healthcare Quality & Hospital Statistics	3	1	-	4	100
BHIM-19	HIM Practicum - II	-	-	8	4	100
BHIM-20	Open elective	2	1	-	3	100
	Total	**12**	**4**	**8**	**20**	**600**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC).						

Fourth Semester

Course de	Course Title	Credits Distribution (L, T & P are hours/week)				Marks
		L	T	P	C	Total
BHIM-21	Biostatistics & Research Methodology	3	1	-	4	100
BHIM-22	Organization & planning of HIM department	3	1	-	4	100
BHIM-23	Health Insurance management	2	-	-	2	100
BHIM-24	Application of HIM in non-traditional setting	2	-	2	3	100
BHIM-25	Hospital Accounting	2	1	-	3	100
BHIM-26	Consumer Digital Health	2	1	-	3	100
BHIM-27	Program Elective – I	2	1	-	3	100
	Total	**16**	**5**	**2**	**22**	**800**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC).						

Fifth Semester

Course Code	Course Title	Credits Distribution (L, T & P are hours/week)				Marks
		L	T	P	C	Total
BHIM-28	Electronic Health Records	2	-	-	2	100
BHIM-29	Healthcare policies & standards	2	-	-	3	100
BHIM-30	Disease Classification and Nomenclature	1	-	6	4	100
BHIM-31	Hospital Organization & Administration	2	1	-	3	100
BHIM-32	Information Governance & Data Privacy	2	-	-	2	100
BHIM-33	Health information Systems analysis & design	2	1	-	3	100
BHIM-34	Open elective - II	2	1	-	3	100
	Total	**13**	**3**	**6**	**20**	**800**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC).						

Sixth Semester

Course Code	Course Title	Credits Distribution (L, T & P are hours/week)				Marks
		L	T	P	C	Total
BHIM-35	Human resource management	2	1	-	3	100
BHIM-36	Disease Coding for Health Insurance	1	-	6	4	100
BHIM-37	Advances in HIM	2	-	-	2	100
BHIM-38	Professional practices in HIM	2	1	-	3	100
BHIM-39	Clinical Decision Support System and Information Systems	2	-	-	2	100
BHIM-40	Medical Transcription	1	-	4	3	100
BHIM-41	Program Elective- II	2	1	-	3	100
	Total	**13**	**3**	**10**	**20**	**700**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC).						

Seventh and Eighth Semester- Internship/Externship

A compulsory Internship & Externship of one-year duration (2000 hours) equivalent to 42 credits must be completed by a student to be eligible for awarding a bachelor's degree.

Note: Individual/group projects can be included as an option during internship & externship. Externship must be of minimum 3 months duration.

Stipend for the internship:

During the internship period a student shall be paid a minimum of INR 3500/- month. The stipend shall be payable to all students who are carrying out a internship at designated hospitals only.

Log notes for BSc. HIM program:

Introduction:

Every student must be provided with a standard log note from the beginning of the first year and same shall be used till the end of the program. A log note shall be a verified record of the progression of learner documenting the requisite knowledge, skills, attitude, and competencies acquired throughout the coursework.

Minimum requirements of a log notes:

- The log note should document the active learning process by the student and progression to achievement of competencies or pre-determined task.
- The log note shall be in accordance with the minimum course curriculum requirements prescribed for the program.
- The log note shall be an integral part of formative and continuous assessment of a student.
- A sample template for a log note with minimum requirements is provided below:

Institution Name **Department Name** **Program title:**							
Name of the student:				Roll No:			
Subject:				Year/Semester:			
Sub items:	Assignments/seminars/group activities/problem-based learning/ hospital postings/lab work/practical/self-directed learning /group projects/projects						
1	2	3	4	5	6	7	8
Name of the activity	Duration	Knowledge assessed	Competency assessed	Rating/Score	Faculty decision	Faculty sign	Feedback received. Learner sign

Note: Same template can be replicated for different courses

BHIM-01/02: Human Anatomy and Physiology

On completion of this subject, the student will be able to:

- Identify all anatomical structures of the human body
- Understand the technical functions of various organs and systems of the body
- Acquire knowledge about various body fluids, hormones and enzymes

1. Anatomy:

i. Integumentary system
   - Epithelium – Types and functions
   - Connective tissue – fibres and cells

ii. Musculoskeletal system
   - Cartilage – type, structure and functions
   - Bone – types, structure and blood supply
   - Muscles – classification, structure and function
   - Neuron – types and structure, typical spinal nerve
   - Blood vessels – arteries, vein lymph vessels, lymph nodes, structure of lymph node
   - Joints – classification, examples, structure of a typical synovial joint
   - Classification of synovial joint

iii. Respiratory system
   - Nasal Cavity, Larynx, Trachea, Thoracic Cage, Diaphragm, pleura, lungs

iv. Cardiovascular system
   - Mediastinum, Pericardium, heart, blood supply and nerve supply of heart, blood vessels in thorax, thoracic duct, major arteries and veins of head and neck, Major arteries and veins of abdomen and pelvis

v. Blood and lymphatic system

vi. Digestive system
   - Tongue, salivary glands, pharynx, esophagus, stomach, small intestine, large intestine, rectums and anal canal, Difference between jejunum and large intestine, difference between small and large intestine, liver, extra-hepatic biliary apparatus, pancreas

vii. Urogenital systems
   - Urinary System: Kidney, Ureter, urinary bladder, urethra
   - Male Reproductive System: Testes, spermatic cord, vas deferens, prostate, seminal vesicles and ejaculatory duct
   - Female Reproductive System: Uterus, uterine tube, ovary

viii. Endocrine system
   - Pituitary gland, thyroid gland, parathyroid gland, suprarenal gland

ix. Nervous system
- Spinal cord, Brain, External feature of medulla oblongata, cerebellum, Attachment of cranial nerve to the brain stem, Mid-brain, Diencephalon, Corpus striatum, Cerebral hemispheres, fiber system of brain, blood supply of brain, ventricle, CSF production and circulation

x. Organs of special sense
- Gross anatomy of eye; Gross anatomy of external, middle and internal ear; Skin

2. Physiology:

i. Basic concepts and Nerve physiology

- Transport across cell membrane: Passive transport- diffusion, facilitated diffusion, osmosis; Active transport-primary and secondary active transport
- Body fluids: Distribution of total body water, ionic composition of body fluids
- Neuron: Differences in structure and function of myelinated and unmyelinated nerve fibres
- Resting membrane potential and Action potential

ii. Muscle physiology
- Muscle: Classification, characteristic features of skeletal, cardiac and smooth muscles
- Skeletal muscle: Structure, types of muscle fibers, neuromuscular transmission, excitation contraction coupling, rigor mortis
- Smooth muscle: Types

iii. Blood
- Composition and functions of blood
- Plasma proteins and their functions
- Red Blood Cells: Erythropoiesis- Stages and regulation Hemoglobin: Normal values, variations and functions White Blood Cells: Types, normal values and functions Platelets: Normal range, functions, purpura
- Coagulation or clotting of blood: Clotting factors, Intrinsic and extrinsic mechanisms, hemophilia
- Anticoagulants: Classification and examples
- Blood groups: ABO and Rh systems, importance of blood grouping, hazards of blood transfusion, erythroblastosis fetalis
- Functions of lymph

iv. Cardiovascular system

- Structure and innervation of heart and blood vessels
- Cardiac muscle: Properties, Cardiac cycle
- Heart sounds: Differences between first and second heart sounds
- Electrocardiogram (ECG): waves, intervals and uses
- Heart rate: Normal value, variations, regulation
- Cardiac output: Definition, normal value, variations and regulation: role of heart rate, stroke volume and myocardial contractility, muscular exercise and cardiac output
- Blood pressure: Definition, normal value, factors influencing BP, short-term regulation

v. Respiratory system

- Organization: air passages, lungs, respiratory membrane
- Mechanism of breathing: Inspiration, expiration, pulmonary ventilation, alveolar ventilation
- Graphical representation of pressure changes during respiration
- Spirogram
- Oxygen transport: Forms, oxygen dissociation curve
- Carbon dioxide transport: Forms of transport, mechanism
- Regulation of respiration: neural and chemical regulation Cyanosis, hypoxia-types, types of hypoxia in which cyanosis occurs Definitions of apnea, dyspnea, asphyxia

vi. Special senses

- Vision: Cross-section of eye
- Functions of aqueous humor
- Visual pathway, visual filed defects
- Accommodation to near vision, light reflex, refractory errors of the eye
- Visual acuity
- Hearing: Structure and functions of external, middle and inner ear
- Mechanism of hearing
- Vestibular apparatus: Parts and functions
- Receptors for taste and smell sensations

BHIM-03: Fundamentals of Information Technology

- Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.
- Input output devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).
- Processor and memory: The Central Processing Unit (CPU), main memory.
- Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.
- Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).
- Introduction to MS-Word: 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.
- Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.
- Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
- Introduction of Operating System: introduction, operating system concepts, types of operating system.
- Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.
- Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.
- Application of Computers in clinical settings.

BHIM-04: Medical Ethics and Professional Values

- Medical ethics - Definition - Goal - Scope
- Introduction to Code of conduct
- Basic principles of medical ethics – Confidentiality
- Malpractice and negligence - Rational and irrational drug therapy
- Autonomy and informed consent - Right of patients
- Care of the terminally ill- Euthanasia
- Organ transplantation
- Medico legal aspects of medical records – 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.
- Data privacy – Indian government acts (IT act, SPDI rule etc.) on data management and sharing.
- Professional Indemnity insurance policy
- Development of standardized protocol to avoid near miss or sentinel events
- Obtaining an informed consent.

BHIM-05: Communication skills

Major topics to be covered under Communication course

- Basic Language Skills: Grammar and Usage.
- Business Communication Skills. With focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.
- Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.
- Basic concepts & principles of good communication
- Special characteristics of health communication
- Types & process of communication
- Barriers of communication & how to overcome

BHIM-06: Foundations of Health Information Management

1. Characteristics of quality Medical Records:
    - Definition, Characteristics of 'Good' Medical Record
    - Values of 'Good' Medical Record to various users
    - Required Characteristics of entries in medical Records
    - Source-oriented, Problem-oriented, and Integrated medical records
    - Medical Record Forms and their Content
    - Standard Order of Arrangement of Medical Record forms
    - Analysis of Medical Record-Quantitative & Qualitative
    - Incomplete Record Control

2. Medical Records for different patient encounters with health care facility
    - Ambulatory Care Records {Emergency & Outpatient Records]
    - Clinical Records in Long Term Care and Rehabilitation Facilities
    - Mental Health Records

3. Filing Methods, Storage, and Retention
    - Numbering and Filing Systems
    - Filing
    - Storage- Microfilming and Disk Storage
    - Retention
    - Registers & Indexes
    - Record movement control & Tracking system

4. Organizational Aspects of Medical Record Department/Services
    - Policies
    - Functions
    - Location, Space and Layout
    - Equipment
    - Forms Designing and Control
    - Medical Records Flow and Processing

5. Organizational Aspects of the Centralized Admitting Services

- Principles of Identification of a Patient
- Methods of Collection of Identification Data
- Types of Central Admitting Services
- Admitting Policies
- Procedure Outlines for Admissions
- Flow of Records following Admissions
- Advantages of good Admitting Policies and Procedures
- Pre-requisites for smooth & efficient functioning of the Centralized Admitting Services

6. Healthcare Data

- Primary source of Health Data and Information
- Health data users and decision making
- Overview of Patient Record
- Data Collection Standards
- Basic principles of data collection
- Methods to ensure data quality
- Data needs across the healthcare continuum

7. External Influences on the HIM profession

- Standards and Regulations
- Medicare
- HIPPA
- Computer Technologies
- Malpractice Claims
- Healthcare Reorganization

BHIM-07: Introduction to Healthcare Delivery System

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. Topics to be covered under the subject are as follows:

1. Introduction to healthcare delivery system
    - Healthcare delivery system in India at primary, secondary and tertiary care
    - Community participation in healthcare delivery system
    - Health system in developed countries.
    - Private Sector
    - National Health Mission
    - National Health Policy
    - Issues in Health Care Delivery System in India

2. National Health Program- Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Program.

Introduction to AYUSH system of medicine

- Introduction to Ayurveda.
- Yoga and Naturopathy
- Unani
- Siddha
- Homeopathy
- Need for integration of various system of medicine

3. Health scenario of India- past, present and future

- Demography & Vital Statistics-
- Demography – its concept
- Vital events of life & its impact on demography
- Significance and recording of vital statistics
- Census & its impact on health policy

4. Epidemiology

- Principles of Epidemiology
- Natural History of disease
- Methods of Epidemiological studies
- Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

5. Community orientation and clinical visit

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 under-graduate 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.

- 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.
- The student will also be briefed regarding governance at village level including interaction and group discussion with village panchayat and front line health workers.
- Clinical visit to their respective professional department within the hospital.

Second Semester

BHIM-08: Basics of Pharmacology

Topics covered:

i. Introduction to pharmacology
   - Route of Drug Administration
   - Pharmacokinetics and Pharmacodynamics
   - Drug Toxicity and Safety
   - Autonomic nervous system, including skeletal muscle relaxants
   - Introduction to ANS
   - Cholinergic drugs, Anticholinergic drugs, Neuromuscular blocking drugs and Adrenergic drugs
   - Adrenergic Receptor Antagonist

ii. General and Local anesthetics
iii. Hypnotics and Sedatives
iv. Narcotic analgesics, narcotic antagonists
v. Non-narcotic analgesics, antipyretics
vi. Psycho-pharmacological agents
vii. Drugs acting on autonomic nervous system
viii. Antihistamines
ix. Blocking agents
x. Respiratory pharmacology, cardiovascular pharmacology, Gastro intestinal tract
xi. Chemotherapy
   - General aspects
   - Beta lactam antibiotics
   - Cotrimoxazole
   - Aminoglycosides
   - Tetracyclines
   - Macrolides
   - Quinolones
   - Antifungal agents
   - Antiviral drugs
   - Antitubercular drugs
   - Antileprotic drugs
   - Antimalarial drugs
   - Antiamoebic drugs
   - Anthelminthics
   - Anticancer drugs

xii. Coagulants and anticoagulants

xiii. Diuretics, hormones

- Corticosteroids
- Antidiabetic drugs
- Thyroid and antithyroid drugs

xiv. Chemotherapy

xv. Drug addiction

xvi. Special topics

- Standard abbreviations and symbols used in prescription
- Sources of drug information – Pharmacopeias, non-official references, MIMS, medical journals, FDA – product information
- Drug nomenclature – Chemical, generic, official and trade name
- Prescription writing

BHIM-09: Microbiology & Pathology

1. Microbiology

- Introduction to Microbiology,
- Classification and characteristics of organisms,
- Cultivation and identification of organisms, bacteria etc.,
- Disinfection, antiseptics, sanitation,
- Immunity,
- Allergy
- Pathogenic organisms, non-pathogenic organisms, virus and fungus.

2. Clinical and General Pathology

Topics covered:

- Introduction to Pathology
    - Cell Injury: Necrosis – Definition, Types of Necrosis with examples
    - Cell Growth and Differentiation: Definition and Examples of Hypertrophy, atrophy, hyperplasia, metaplasia
- Inflammation and Repair
    - Inflammation: Definition, types of inflammation with examples
    - Vascular chances: Hemodynamics change, change in vascular permeability Cellular events: Margination, adhesion, emigration, chemotaxis, phagocytosis Granulomatous inflammation
    - Healing and Repair
    - Granulation tissue
    - Process of healing by primary intention Process of healing by secondary intention
    - Factors influencing wound healing
- Infection
    - Fluid and Hemodynamics Derangements: Edema, Shock, Thrombosis, Embolism, Infarction
- Degeneration
- Neoplasia
    - Definition, nomenclature
    - Definition of dysplasia and anaplasia
    - Difference between benign and malignant tumours
    - Cause of tumours Spread of tumours Diagnosis of tumours
- Blood groups, cross-matching, transfusions
- Tests done on various body fluids and tissues
- Infectious Disease
    - Tuberculosis, Leprosy & AIDS
    - Genetics (Basic Terminology)

- Disease of red blood cells
    - Anemia: Definition, classification
    - Clinica Features, aetiology and basic investigation of Nutritional anemia & Hemolytic anemia
    - Bleeding Disorder: Classification, clinical features, basic investigation
    - Coagulation disorder: Examples, Hemophilia
    - Platelets disorder: Cause of thrombocytopenia including ITP

- Disease of white cells and lymph nodes
    - Leukemia: Definition, FAB classification, clinical features
    - Lymphoma: Definition, types and Clinical Features

BHIM-10: General Psychology

1. Introduction to Psychology

- Define Psychology.
- Outline the evolution of Psychology as a scientific discipline .
- Summarise the modern schools of Psychology
- Enumerate the different branches of Psychology.
- What is Introspection? List the merits and demerits of introspection .
- Explain the importance of Experimental method in the field of Psychology.
- Explain the observation method in Psychology .

2. Perception

- Define Perception .
- Describe the various principles of Perceptual groupings .
- Illustrate the Gestalt laws of perception .
- Define Perceptual constancy and explain its types.
- Explain Monocular and Binocular cues in Perception .
- Explain types of motion perception .

3. Learning

- Define Learning .
- Explain Pavlov's Classical Conditioning.
- Summarize the various processes of Classical Conditioning with examples .
- Explain the applications of Classical Conditioning.
- What is Operant Conditioning .
- Compare the types of reinforcement and Punishment.
- Explain with the examples the schedules of Reinforcement .
- Explain the applications of Operant Conditioning.
- Explain observation learning with its classic experiment .
- Illustrate the processes in observation learning .

4. Memory

- Define Memory .
- List the processes that underlie memory .
- Explain the characteristics of different types of memory. (sensory, STM, LTM)
- Summarise the different theories of forgetting . (Decay, motivated forgetting, interference, cue dependant displacement)
- List the various strategies to improve memory .

5. Thinking & Problem solving

- Define thinking .
- How thoughts are represented .
- Define concepts.
- Compare the different types of concept .
- Enumerate the steps in creative thinking .
- List the steps involved in problem solving .
- What are the different strategies used to solve problems . (Trial & error, Heuristics, Algorithm)

6. Intelligence

- Define Intelligence .
- Summarise the various theories of Intelligence . (Two factor, Crystallised and Fluid, Multiple intelligence)
- List the different types of Intelligence tests .
- Define Emotional Intelligence .
- What are the different components of emotional intelligence? .

7. Motivation & Conflict

- Define Motivation .
- Summarize the biological theories of Motivation . (Drive reduction theory, Optimal arousal theory, Instinct theory)
- Explain the Psychological theories of Motivation . (Maslow's hierarchy theory)
- Define Conflict .
- Explain the types of Conflict with examples . (Approach Approach conflict, AvoidanceAvoidance conflict, Approach Avoidance conflict and Double Approach Avoidance conflict)
- Summarise the different ways to handle conflict .(Task and defense oriented)

8. Emotion

- Define Emotion .
- List the characteristics of Emotion .
- Explain the various theories of Emotion .
- (JamesLange, Cannon Bard, Schatcher Singer)

9. Personality

- Define Personality.
- Explain the Psychodynamic theory of Personality .
- Explain the trait approach towards Personality .
- Summarize Rogers' humanistic approach in understanding Personality .
- Enumerate the various assessment methods in studying Personality .

BHIM-11: Environmental Studies and Indian Constitution

1. Environmental Studies and multi-disciplinary nature

- Explain the meaning, objectives and major environmental issues .
- What is sustainable development? .
- Explain the global environmental concerns .

2. Biodiversity, Ecosystem, Energy and natural resources

- Classify the natural resources .
- List the renewable and non- renewable resources .
- Outline the consumption of renewable and non-renewable resources
- Explain the conservation methods of renewable and non-renewable resources
- Outline the availability of water resources, forest, land and mineral resources.
- Summarize the different types of energy . (Conventional sources & Non-Conventional sources of energy, solar energy, Hydro electric energy, Wind Energy, Nuclear energy, Biomass & Biogas, Fossil Fuels, Hydrogen as an alternative energy)
- Define Ecosystem .
- Explain the meaning, structure and functions of ecosystem .
- Explain the biotic and abiotic components of ecosystem .
- Describe the trophic levels in ecosystem .
- What is an energy flow in an ecosystem .
- Explain Biodiversity and its conservation .
- (in situ & ex situ, IUCN red list)

3. Environmental Pollution

- Explain the various types of Environmental Pollution . (water, air, land, noise, solid waste, Biomedical waste, nuclear pollution, marine pollution)

4. Environmental laws and legislations

- Outline the environmental laws and legislations . (Related to general, air, water, biodiversity and forests)
- Explain the roles and responsibilities of state and central Pollution control Boards .
- What is Environmental impact assessment (EIA) .

5. Disaster management

- Define disaster .
- What is disaster management? .
- Classify the types of disaster .
- What is disaster risk formula .
- Explain the phases in
- Disaster management phases . (Disaster management cycle, Emergency response and recovery, Hazardous waste spills and dangers posed)

Introduction to Indian Constitution

- Outline the evolution of the Legal System . (pre-colonial and colonial times, Common Law, Civil Law and Socialist Legal System)
- Explain the constitutional history and constitutional assembly .
- Explain the various organs of the Government . (Executive, Legislature and Judiciary, and Panchayat institutions)
- Summarise the functions of high court and supreme court of India .

1. Fundamental Rights

- Explain the individual rights and fundamental rights .
- Outline the history of the demand for fundamental rights .
- Classify the fundamental rights .
- Explain how fundamental rights are a guarantee against state action .
- Summarise Article 14 to Article 30 .
- Explain supreme court as the guardian of Fundamental Rights .

2. Fundamental Duties and Directive Principles of State Policy

- Explain fundamental duties and its enforcement .
- Summarise the utility and the scope of DPSP.
- Outline the socialistic pattern of society .
- Explain the conflict between fundamental rights and DPSP .

3. Role of President and Governors/ Cabinet

- What is the procedure followed while electing a President .
- Explain the power and duties of the President .
- Outline the power and duties of the Governors .
- Explain the role and functions of the council of Ministers .

4. Role of citizens, Constitutional laws(IPC and CrPC), RTI

- Explain the role of citizens in a democracy .
- Explain constitutional laws .
- Explain the Indian Penal Code and Code of Criminal Procedure .
- Summarise right to Information.

BHIM-12: Medical Terminology – I

1. Introduction

- Origin, uses and purpose of medical terminology

2. Stem Words/Root

- Explain the various stem words of the following systems: Musculo-skeletal system, respiratory system, cardiovascular system, Digestive system, Endocrine system, Central Nervous system, Urinary system, Reproductive system, Organs of special sense and Integumentary system

3. Prefixes and pseudo prefixes used in medical terminology

4. Suffixes and pseudo suffixes used in medical terminology

5. Surgical procedures

- Surgical procedure terms used in various systems Musculo-skeletal system, respiratory system, cardiovascular system, Digestive system, Endocrine system, Central Nervous system, Urinary system, Reproductive system, Organs of special sense.

6. Disease, disorders and dysfunctions

- Disease, disorders and dysfunctions of following body system: Musculo- skeletal system, Respiratory system, Digestive system

7. Common Medical Terms

- Explain common medical terms and meaning of those terms

8. Signs and Symptoms

- Classify Common signs and symptoms of disease conditions

BHIM-13: Deta Base Management System

1. Introduction to Database Management System

- Define the database, Database Management System .
- Compare the flat file with relational database management system

2. Microsoft ACCESS

- Introduction to MSAccess
- What is Microsoft Access? .
- List the different MS Access database objects .
- Show tableconfiguring fields, key fields, defining relationship
- Show Inserting and modifying the records

3. Introduction to filters, forms and reports

- Filter Forms
- Sort Forms
- Sort Reports
- Show a form using wizard, design view, Insert, Delete and update the record using form
- Show sorting and filtering data using forms
- Show a report using wizard and design view
- Analyse the report by sorting fields and grouping

4. Writing and modifying queries

- Introduction to Query
- Modifying Query
- Show queryrun, save, renaming a query, multitable query
- Show modifying a queryParameter, simple and advanced queries

5. Charts and Import DATA

- Introduction to charts
- Import data
- Demonstrate Visualizing the data using charts
- Demonstrate Importing data into tables

BHIM-14: HIM Practicum – 1

This professional practice experience takes place in a health information management department of an acute healthcare facility. Students are supervised by qualified personnel assigned by the healthcare facility, and are provided with practical experiences that ground the theories acquired in prior coursework. Following areas should be covered during the postings.

1. Help Desk
    - The various activities of the Help desk section of a hospital.
2. New/ Old Registration
    - All the processes pertaining to registration of outpatients at the hospital
3. Admissions or Admitting Department
    - All the processes pertaining to admissions of inpatients at the hospital
4. Billing and Reimbursement
    - All the billing and reimbursement process of inpatients at the hospital
5. Outpatient Clinics/OPD
    - All the administrative activities of the outpatient clinics

Third Semester

BHIM-15: Foundations of Management

2. Manager and Managing
    - Levels and processes of Management
    - Roles, Skill, and Functions of a Manager
    - Management and Administration

3. Planning
    - Plan and planning
    - Requisites for effective planning

4. Organization and Organizing
    - Organization
    - Organizing Authority,
    - Responsibility
    - Span of Management
    - Departmentalization
5. Directing
    - Direction
    - Order

6. Communication
    - Forms of Communication
    - Communicating Networks
    - Barriers to communicating

7. Coordination and Coordinating
    - Co-ordination
    - Co-operation
    - Interdependence

8. Decision Making
    - Decision
    - Types of rational decision making

9. Staffing
    - Manpower planning
    - Recruitment
    - Selection
    - Placement
    - Orientation
    - Training and Development
    - Performance Appraisal
    - Wage incentive plans
    - Promotions

10. Leader and Leadership
    - Types of leaders
    - Leadership theories
    - Motivational techniques
    - Morale
    - Counseling
    - Mentoring

11. Control and Controlling
    - Control as a function
    - Controlling as a process
    - Techniques

11. Management Principles
    - Management thoughts through ages
    - F.W. Taylor
    - Henry Fayol

BHIM-16: Medical Terminology – II

1. Disease, disorders and dysfunctions

- Disease, disorders and dysfunctions of following body system: Cardiovascular system, Endocrine system, Metabolic & nutritional disorders, Central Nervous System, Mental & Behavioural, Urinary system, Male & Female reproductive system, Pregnancy, Childbirth and puerperium, Eye & Ear, Skin disease, Infectious Disease, Sexually Transmitted disease.

2. Common medical Abbreviations

- List out Various Abbreviations and its expansion

3. Syndromes

- Explain various syndromes

4. Terminology of Malignancy

- Explain Benign & Malignancy
- Illustrate the symptoms of malignancy
- Discus Treatment modalities
- Classify types of cancers

BHIM-17: Health Information Management System

1. Professional Core Model of Health Information Management

- Core model of HIM
- Roles and Values of HIM
- Resources for Health Information Systems

2. Health Information System Architecture and Models

- Types of Health information system
- Technologies in management of HIS Architecture,
- Models and frameworks for HIS

3. Introduction to Terminologies and Classification Systems

- Evolution of the nomenclature system
- SNDO
- SNOP
- SNOMED
- SNOMED-CT

4. Disease Classification Systems for HIS

- Evolution of coding classification systems
- International classification systems (ICF, ICD-classification systems)
- Procedure coding Systems
- CPT,
- ICPM,
- ICD10 PCS
- HCPCS

5. New technologies in healthcare

- AI, mHealth,
- Internet of Medical Things,
- Digital twins,
- cloud computing,
- primary prevention of disease,
- nanotechnology,
- big data analysis

BHIM-18: Healthcare Quality and Hospital Statistics

- Introduction to quality management
- Quality management principles
- Total Quality Management
- Introduction to quality Assurance in health care
- Dimensions of quality Assurance in health care
- Core principles of quality Assurance in health care
- Quality Assurance models in health care
- Quality Improvement methods and models in health care
- PDCA, Performance Improvement, six step method etc.
- Monitoring and evaluation process in health care
- Utilization review management process
- Credentialing in health care
- Risk management activities
- Medical record documentation analysis – Quantitative and Qualitative
- Medical audit, Hospital infection control program

Hospital Statistics

- Introduction to Hospital Statistics
- Mortality Statistics (Net death rate, gross death rate, Anaesthesia death rate, postoperative death rate, maternal death rate, infant mortality rate, neonatal death rate, fetal death rate)
- Solving various statistical problems
- Morbidity statistics (Complication rate, comorbidity rate, postoperative infection rate, nosocomial infection rate, community acquired infection rate, total infection rate, prevalence and incidence rate).
- Solving various statistical problems
- Census statistics (Daily inpatient census, Inpatient service days, inpatient bed count, length of stay, average length of stay, total length of stay, average daily inpatient census, Bed occupancy rate, Bed turnover rate)
- Solving various statistical problems
- Different types of data and types of data display.

BHIM-19: HIM Practicum – II

This professional practice experience takes place in a health information management department of an acute healthcare facility. Students are supervised by qualified personnel assigned by the healthcare facility, and are provided with practical experiences that ground the theories acquired in prior coursework. Following areas should be covered during the postings

1. Indexing and Filing

- Describe and demonstrate the various functions of the filing and indexing of a medical record.

2. Correspondence

- Describe and demonstrate the various functions of the entire process of correspondence within the enterprise and external agencies

3. Statistics

- Estimate the data from the medical records for research reporting
- Compile and compare the various data for statistical purposes and present the data

4. Medical Audit

- Analyse and compare the various functions of medical audit with regards medical records department according to standards prescribed by NMC

5. Overall Management of the Health Information at a Hospital

- Develop a plan for coordination of the medical records department and organizing and supporting administrative activities
- Develop a contingency plan for implementing electronic health records for a Primary, Secondary and Tertiary care Hospital.

BHIM-20: Open Elective-I

Fourth Semester

BHIM-21: Bio-Statistics & Research Methodology

1. Bio-statistics

- Definition of Statistics and Biostatistics
- Role of statistics in Health Sciences
- Variables: Qualitative & Quantitative, Continuous & Discrete, Dependent & Independent
- Scales of Measurement: Nominal, Ordinal, Interval, Ratio
- Organization of data
- Types of class intervals: Inclusive, Exclusive & Open ended
- Frequency Distribution: Measures of Central Tendency – Arithmetic Mean, Median and Mode for un-grouped and grouped data
- Presentation of data: Bar diagram, Pie Diagram, Histogram, Frequency polygon, Frequency curve, and Line diagram.
- Measures of Variation: (Definition, computation, merits, demerits & application), Range, Inter Quartiles, Mean Deviation, Standard Deviation Co-efficient of Variation
- Partition values: Quartiles, Percentiles
- Probability: Definitions of Classical Probability (Priori) and Frequency, Probability (Posteriori), Addition and Multiplicative Theorems of Probability
- Normal Distribution: Concept, Normal curve, Properties, Skewness and Kurtosis
- Probability Distribution: Binomial distribution, Poisson distribution and Normal distribution
- Sampling- Definition: Population and simple Sampling, Simple Random Sampling, Stratified Random Sampling, Systematic Random Sampling and Cluster Sampling
- Correlation and Regression: Scatter Diagram, Linear Correlation and Linear Regression Equation Test of Significance – Procedure Test of Significance for large samples and for small samples, Properties of correlation coefficient, Examples
- Research Process and Research Methodology
- Chi-square Test – Testing for association Misuse of Chi-square Test

Research Methodology

The objective of this is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings.

- Introduction to research methods
- Identifying research problem
- Ethical issues in research
- Research design
- Basic Concepts of Biostatistics
- Types of Data
- Research tools and Data collection methods
- Sampling methods
- Developing a research proposal

BHIM-22: Organization and Planning of Health Information Management Department

This subject introduces strategic planning and organizational development. The interplay of strategic leadership, management, and planning will be applied to health information management. Other topics include organizational assessment and benchmarking, change management, and leading enterprise-level projects.
The list of topics to be covered are:

- Knowledge of leadership, management, organizational structures theory
- Knowledge of accreditation requirements, licensing regulations, and certification requirements relevant to department/organization
- Knowledge of financial management and budgeting
- Strategy development
- Policy development
- Ability to create agendas, lead meetings, maintain documentation, and follow up
- Effective communication and negotiation skills
- Conduct a stakeholder analysis

BHIM-23: Health Insurance Management

- Terminologies
- Functions of a health financing system
- What is health insurance?
- History of health insurance
- Values in health insurance
    - Solidarity
    - Risk pooling / sharing
    - Equity
- Participation / empowerment
- The health insurance framework
    - Community
    - Providers
    - Organizer
    - Insurer
- Premium
    - Benefit package
    - Payments
    - Administration
    - Risk management
    - Monitoring the Program
- Types of health insurance
    - Social health insurance
    - Private health insurance
    - Community health insurance (CHI)
    - Government-initiated health insurance schemes (GHI)
    - Differences in the four categories
- Advantages of health insurance
- Problems with health insurance
    - Adverse selection
    - Moral hazard
    - Cost escalation
    - Administrative costs
    - Fraud
- Health insurance in India
    - Social Health insurance
    - Voluntary (commercial) health insurance
    - Daily hospitalization expenses – examples
    - Critical illness cover - examples
    - Community health insurance (CHI)
    - Government-initiated health insurance schemes

BHIM-24: Application of HIM in Non-traditional Settings

The subject covers reimbursement, coding, licensing, and accreditation issues in these facilities:

- Management of health information in non-acute hospital settings
- Ambulatory care, mental health
- Home health, skilled nursing
- Emergency medical services

BHIM-25: Hospital Accounting

The course aims to give a fair view of exposure to the students on the basic concepts of accounts, Finance and Financial Management in Hospital and practical application in Hospital Financial Management Accounting and Health Insurance.

1. The Nature and purpose of Accounting, Accounting Concepts & Accounting records:
    - What is accounting information? Who needs it? What they need or expect?
    - What do accountants do?
    - Single Entry Book – keeping
    - Double Entry Book - keeping
    - What is an Account? Making entries.
    - Five types of Accounts (Income, Expense, Asset, Liability, Capital)
    - Book – keeping rules
    - Accounting books/ledgers (Nominal, Purchase, Sales, Journal etc)
    - Dealing with cash, imprest system

2. Preparation of various Financial Statements:
    - Trial Balance
    - Receipts and Payments
    - Income and Expenditure Account
    - Balance Sheet

3. Fixed assets and Depreciation:
    - What are fixed assets and why are they different?
    - What is depreciation and why do we need it?
    - How do we calculate depreciation? (pros and cons of different methods)
    - Accounting entries for depreciation

4. Costing and Pricing:
    - Financial accounting Vs. Cost accounting
    - Key terms: Direct/indirect, fixed/variable/semi-variable
    - Analysing results: Standard/budgeted/actual
    - Costing hospital services
    - Taken action: controllable /uncontrollable
    - Making decisions: Marginal/book/out –of pocket costs
    - Reporting costs: Cost Centres, allocation and apportionment of costs
    - Pricing methods and decisions.

5. Inventory Accounting:
    - Inventory / stocks
    - Valuation (FIFO, LIFO, WAC etc)
    - Optimum balance and reorder levels.

6. Analysis of Financial Statements:
    - Ratio analysis – meaning and purposes
    - Ratios applicable to Non-profit making organizations

7. Financial Planning and Control:
    - Budgets and budgetary control

8. Use of Computers in Accounting:
    - Computerized ledger systems
    - Spreadsheets & Excel based accounting

9. Accounting and Audit Procedures in Health Care Sector:
    - Accounting System in hospital
    - Purpose of an audit and auditing principles
    - What the auditor does?
    - The audit report – "True and Fair View"
    - Legal requirements: layout, audit and filing of accounts

10. Health Insurance and Third Party Payers
    - Definition and history of Health Insurance
    - Concepts in Health Insurance
    - Issues in Health Insurance
    - Effective Health Insurance
    - Good & Bad in Health Insurance
    - Reasons for lack of coverage
    - Denial of claims
    - Contracts or Memorandums of Understanding
    - Health Insurance in India
    - Health Insurance & Third Party Administrators
    - Insurance Regulatory Development Authority & its role
    - Billing & Health Insurance Billing

BHIM-26: Consumer Digital Health

- Introduction to digital health and consumer health informatics
- Digital health stakeholders
- Digital health benefits and risks
- Digital health solutions in health care
- Barriers to digital health technology
- Digital health – patient and physician perspectives
- Digital health – technology, system and enterprise perspectives
- Digital health legal perspectives
- Consumer Health behavior models with respect to digital health

BHIM-27: Program Elective – I

(An appropriate program elective can be chosen from the listed program electives)

Fifth Semester

BHIM-28: Electronic Health Record

This subject explores the development of electronic health records (EHRs) and health informatics. Students will analyze the technical components of EHRs including laboratory information systems, pharmacy information systems, picture archiving and communication systems, order sets, clinical protocols, provider orders, medication administration records, point-of-care charts, and clinical decision support systems. The benefits and barriers of implementing electronic health records will be discussed. The course will also cover personal health records, network architectures, and connectivity.

The list of topics to be covered are:

- What is EHR?
- Benefits of Electronic Health Records
- How to Implement EHRs
- Barriers to implement EHRs
- What are the advantages of electronic health records?
- What information does an electronic health record (EHR) contain?
- EMR vs EHR – What is the Difference?

BHIM-29: Healthcare Policies and Standards

- Basic concepts and development of health care policies
- Public health policies in Indian and global context
- Universal Health coverage
- Health care inequalities – conceptual framework of health inequality
- Public and private sector role in managing health inequalities
- Disease control policies: global and national perspectives
- Sustainable development goals and health
- National Health mission and programs
- Indian public health standards
- Health record IT standards – HER, DICOM, LOINC
- HIPPA and GDPR
- Accreditation standards – NABH, NABL and JCI.

BHIM-30: Disease Classification and Nomenclature

1. Morbidity and mortality coding and Application of selection rules

- Morbidity and mortality coding.
- Selection rules for the main condition and other conditions.
- Selection rules for underlying cause of death.

2. Contents and conventions of ICD 10 and its application in mortality and morbidity coding.

- Contents and conventions used in ICD 10.
- Application in mortality and morbidity coding

3. Coding guidelines from chapter I through chapter XXI and its application.

- Coding guidelines from chapter I through chapter XXI and its application

4. Abstraction and compilation of morbidity and mortality data for internal and external reporting.

- Abstraction and compilation of morbidity and mortality data for internal and external reporting

5. Coding Practice (Live medical records)

BHIM-31: Hospital Organization and Administration

1. Introduction to Hospital Administration

- Who's Who in hospital – Key administrators and their functions, overview of medical and para-medical specialties, main service departments:
- Overview of health services – government services: private & not for profit: primary, secondary & tertiary health care: types of hospital: community, super-specialty etc.

2. Hospital Organization

- Basics of administrative areas of hospitals, different types of work places, privatization in health sector

3. Public Relation in a hospital

- Introduction to Public Relation Department and its function, Hospital and news media relations and Disaster Preparedness planning and Promotion of Medical tourism

4. Marketing in Hospitals

- Concept of marketing and Market opportunities, handling the grievance of patients, Advertising and branding of hospitals and innovative marketing, Digital marketing

5. Management of hospital

- Professional Management, Duties of the hospital administrator and Functioning of modern hospitals

6. Disaster management and planning

- Basics of disaster management and Mass casualties, Components of disaster plan, Disaster management planning and implementation

7. Planning and Designing Public Areas

- Introduction, various areas with the hospital, Staff facilities

8. Patient Care Services

- Patient care services and evaluation

9. Pricing in Hospitals

- Hospital Pricing options and Contemplating price changes

BHIM-32: Information Governance and Data Privacy

1. Introduction to Information Governance

- Information governance, evolution, need, benefits,
- Information governance maturity model
- Case Studies

2. Information Governance in Healthcare

- Introduction, Reason for IG in Healthcare, present healthcare scenario – Global & India
- Role of information governance in healthcare, information governance principles for healthcare Policy Framework – National & International,
- Case Studies

3. Information Governance in Managing Healthcare Data

- Healthcare Data Structure,
- Management of Healthcare Data under Information Governance,– National & International
- Case Studies

4. Information Technology to Support Information Governance

- Need of Information Technology in Information Governance
- Benefits of Information Technology
- Role of Information Technology in building information governance, HIT standards
- Case Studies

5. Stakeholders & Information Governance

- Stakeholder of Information Governance in Healthcare
- Stakeholders Expectation Towards Information Governanc
- Role of Stakeholders in Building Information Governance,
- Case Studies

6. Data privacy

- Introduction to data privacy
- Digital health and privacy
- Health data privacy management
- Health data privacy challenges and breaches
- Health data privacy and technology
- Health data privacy standards and applications

BHIM-33: Health Information System analysis and design

- Healthcare information systems development overview
- Systems Development Process & Health Care Settings
- Strategic Planning for IT Projects
- System requirements analysis
- Standard Terminology and Language in Healthcare
- Personal Health Record
- Health Information Exchanges
- System proposal: design & implementation
- Selecting a Healthcare Information System
- Usability of Health Informatics Applications
- System maintenance & support
- Information Systems Training
- Information Security and Confidentiality
- Systems Integration and Interoperability
- Legal and Regulatory Issues

The subject reviews the structure of clinical data and e-health records, and the required standards and regulations for documentation. Health information benchmarks include conceptual, documentation, messaging, and application standards. Students will learn about security issues for reimbursement and prospective payment systems, analytical methods for identifying trends, and presentation techniques for healthcare decision-making.

Introduction to health informatics:
Definition, Domain, Sub-domain, Tools, Focus, Application, subject area, Aspects, & Functions Major theories such as System Theory, Information Theory, Learning Theory and Change Theory Health Informatics Literacy: Information, computer and professional literacy.

Health Information System:
Definition, Purposes, Structure (operation, telecommunication, system development / project management, application support, support, network, system administration), Roles and responsibilities (CIO, Director, Manager, Supervisor, Operator, Telecommunication technician, Telecommunication Operator, System Analyst, Programr, Consultant), Technology infrastructure (Computers, Networks, Peripherals)

Standards in Health Informatics
Standard Coordinating Group, Group formed to developed standard, Professional Organization Supporting the Development of Technical Standards, Establishing International Standards, International Standard & Committee, International Standard, Identifier Standard, General Communication Standards, Specific Communication Standards, Content and Structure Standards, Clinical Data Representation, Standard for Software Application, Telecommunication Standard.

Introduction to Health Informatics Applications
Hospital Information System, Clinical Decision Support System, eHealth, mHealth, Telemedicine

Impact of healthcare informatics on the socio-culture environment of healthcare
Information Needs and Challenges in Healthcare Environment, Advances In Healthcare Informatics In Clinical Area, Changes In Professional Practice due to advances in healthcare informatics, Changes In Management Roles due to advances in healthcare informatics

Future Direction in Health Informatics
Nine trends to predict the development of healthcare informatics, Future Study, Approach for predicting, Trends influencing healthcare informatics, Case Studies

BHIM-34: Open Elective - II

Sixth Semester

BHIM-35: Human Resource Management

1. Introduction to HRM

- Definition and scope of HRM
- Evolution of HRM theories and practices
- Role of HRM in organizations

2. Recruitment and Selection

- Job analysis and job description
- Recruitment methods and sources
- Selection techniques and interviews

3. Employee Training and Development

- Training needs assessment
- Training design and delivery methods
- Employee development programs

4. Performance Management

- Setting performance goals and objectives
- Performance appraisal methods
- Providing feedback and coaching

5. Employee Relations

- Employee communication and engagement
- Conflict resolution and problem-solving
- Employee rights and responsibilities

6. Legal and Ethical Considerations in HRM

- Employment laws and regulations
- Ethical issues in HRM
- Equal employment opportunity

7. Compensation and Benefits

- Wage and salary administration
- Employee benefits and incentives
- Payroll management

8. HRM in Small Businesses and Rural Context

- HRM challenges in small businesses
- HRM practices in rural settings
- Resource constraints and HRM strategies

9. HRM in a Global Context

- International HRM practices
- Cross-cultural considerations in HRM
- Managing global teams

10. Emerging Trends in HRM

- HR technology and automation
- Workplace diversity and inclusion
- Sustainable HRM practices

BHIM-36: Disease Coding for Health Insurance

1. Conventions of ICD 10 CM and selection of code components
    - Format of code,
    - root operative procedure
    - selection of accurate components utilizing the knowledge of conventions.

2. ICD-10 CM coding practice

Conventions of ICD 10 PCS and selection of code components

- Format of code,
- root operative procedure

3. ICD-10 PCS coding practice

4. Conventions of CPT and selection of code components

5. CPT coding practice

BHIM-37: Advances in HIM

1. Advances in Health Information Management

- Explain the advances in HI with the two most recent journal articles

2. Health Care Financing Models

- Explain the Health Care Financing Models with the two most recent journal articles

3. Quality assurance in Health Information Management

- Explain the Quality assurance in Health Information Management with the two most recent journal articles

4. Public Health Information Management

- Explain the Public Health Information Management with the two most recent journal articles

5. Advances in Disease Coding

- Explain the Advances in Disease Coding with the two most recent journal articles

6. Healthcare Policies and Standards

- Explain the healthcare polices and standards applied in India with recent journal articles

BHIM-38: Professional Practice in HIM

1. Communications in Healthcare

- Internal Business Communication in Healthcare
- External Business Communication in Healthcare
- Employment Communication for HIM professionals

2. Employment Communications for HIM Professionals

- Employment communications
- Job applications
- Resume
- Cover letter
- Group Discussion
- Interviews

3. Professional Issues

- Modern Health care team
- Professional image
- Types of Compensation and Productivity measurements
- Technology in professional development
- Motivating healthcare teams

BHIM-39: Clinical Decision Support System and Information System

- Clinical decision support system overview
- Meaningful use and clinical decision support system
- Clinical decision support system types
- Clinical decision support system process
- Clinical decision support system advantages
- Clinical decision support system potential drawbacks
- Barriers to clinical decision support system adoption
- Successful clinical decision support system characteristics
- Clinical decision support system legal issues
- Clinical decision support system ethical issues

BHIM-40: Medical Transcription – (Practical)

1. Introduction to Medical Transcription

- Definition and scope of medical transcription
- Role of medical transcriptionists in healthcare documentation
- Industry standards and regulations

2. Transcription Techniques and Formatting

- Transcription equipment and tools
- Guidelines for accurate and efficient transcription
- Formatting of medical reports and documents

3. Technology Tools in Medical Transcription

- Transcription software and platforms
- Speech recognition technology
- Electronic health records (EHR) systems

4. Common Medical Reports

- Transcription of history and physical (H&P) reports
- Progress notes and consultation reports
- Discharge summaries and operative reports

5. Specialty-Specific Transcription

- Transcription considerations for different medical specialties:
  - Cardiology, gastroenterology, orthopedics, etc.
- Specialty-specific terminology and procedures

6. Editing and Proofreading in Medical Transcription

- Techniques for reviewing and editing transcribed documents
- Grammar, punctuation, and spelling in medical transcription
- Quality assurance and error correction

7. Medical Transcription Ethics and Confidentiality

- Ethics and professionalism in medical transcription
- Patient confidentiality and HIPAA regulations
- Legal and ethical considerations in healthcare documentation

8. Practical Application and Practice

- Transcription practice exercises
- Simulated transcription projects and case studies
- Final transcription project

BHIM-41: Program Elective – II

(An appropriate program elective can be chosen from the listed program electives)

Seventh and Eighth Semester

Internship/Externship:

The internship/externship will span 12 months/ 2 semesters and will comprise of 2000 hours. A candidate must carry out an externship of minimum 3 months duration.

Open Electives

Open elective is credited, choice-based and is graded as satisfactory / not satisfactory (S/NS). Students make a choice from pool of electives offered by the respective institution / Online courses as approved by the department.

Program Electives

A list of program electives is provided for a candidate to choose based on their interest. The curriculum should have a provision to offer a minimum of two program elective during the entire program duration. However, based on need up to two program electives can be made available across different semesters for a candidate to choose. A program elective in a particular semester must offer a minimum of two courses and a candidate can opt for any one specific course of their choice.

1. Public Health Information Management

1. Introduction: Health Information System

- HIS-Definition, Objective, Requirement Of HIS, Source of Information, Functions Of HIS

2. Components of Health Information System

- Types, Various Elements, Steps of Data Collection, Transmission and Processing

3. Organizational Model of Health Services

- Organizational Model of health services, Level Of Health Service, Management Function, Essential Public Health Functions, Use And Utilization Of Health Information

4. Management of Health Information System

- Definition, Elements : Resources & Organizational Rules

5. Health Information System Assessment

- Health Information Subsystem, Component and Objective and steps Involved in Health Information System Assessment, Performance Indicator of Health Information System

6. Population Based Community Health Information System

- History, Key Facet, Basic Principles, Basic Steps For The Development Of Population Based Community HIS

7. Computerization of Public Health Information System

- Reason for Computerization, Software & Hardware, Advantage & Disadvantages

2. Applied Health Informatics

1. Heatlh care Informatics and Decision Making

- Introduction to Decision support system
- Knowledge Management
- Administrative uses of DSS
- Clinical DSS

2. Health care Data and Information Movement

- Health Information Exchange
- Aggregating Health Information
- Unstructured Data
- Coded and Structured Data
- Big data

3. Privacy and Security for Health care Informatics

- Protected Health care information
- Uses and disclosures of PHI
- Security risk analysis
- Administrative, Physical and Technical safeguard standards
- Confidentiality, Integrity and availability
- Medical Identity Theft and Disaster Preparedness

4. Legal Electronic Health Record

- Legal Health Records
- Components of LHR
- Attributes that impact LHR
- Patient record documentation considerations

5. Consumer Health Informatics

- Characteristics of online health consumer
- Consumer HIT
- Computing online health
- Personal health records
- Validity and reliability of online health information

6. Management of Information in Healthcare Organizations

- Evolution from Automation of Specific Functions, to Departmental, to Hospital-wide and then Healthcare System Information Systems
- Information Requirements
- Integration Requirements
- Security and Confidentiality Requirements
- Patient Management and Billing
- Departmental Management
- Care Delivery and Clinical Documentation
- Clinical Decision Support
- Financial and Resource Management
- Central and Mainframe-based Systems
- Departmental Systems
- Integrated Systems from Single Vendors
- Changing Organizational Landscape
- Technological Changes Affecting Healthcare Organizations
- Societal Change

3. Research and Analytics Health Information Management

1. Research in Health Information Management

- research design and methodology
- Quantitative and Qualitative research
- Steps in Literature search

2. Methods of Data collection

- Data Collection Methods
- Measurement and scaling techniques
- Questionnaire designing

3. Role of Data and Information in Analytics

- Data, information, knowledge, meaning, wisdom
- Actionable information based upon key performance indicators
- Semantic interoperability and standards
- Data analytics tools
- Reporting healthcare data

4. Clinical Documentation Improvement

1. Introduction to Clinical Documentation Improvement (CDI)

- Clinical documentation improvement
- Benefits of CDI
- CDI Program

2. Clinical Documentation Requirements

- High quality documentation
- Evidence based documentation
- Criteria for high quality documentation

3. Translation of Clinical Documentation in coded data

- Clinical Documentation and coding
- Basic coding guidelines for CDI
- Overview of DRGs

4. Implementing training for a CDI program

- Staffing in CDI program
- CDI Training
- CDI program management
- CDI review forms and tools

5. Documentation Review and Physician Queries

- Documentation review for CDI
- Physician Query process
- Clinical indicators and queries

6. CDI and Data Elements

- Essentials of data elements
- Operational data: collection & analysis strategies

7. CDI Program Compliance and best practices

- Overview of compliance
- Monitoring the CDI program
- CDI Operational & Financial practices

8. CDI Multidisciplinary team approach

- Introduction: Multidisciplinary team
- CDI governance team
- CDI team dynamics

9. CDI program in various settings

- High quality clinical documentation criteria's.
- CDI for healthcare settings
- CDI in applied areas

Professional competencies

Health Information Management (HIM) professionals play a crucial role in managing the health information systems of the healthcare institution and ensuring the confidentiality, integrity, and availability of healthcare data to all stakeholders. They are expected to adhere to the code of professional conduct to maintain the highest standards of ethics and professionalism. The key aspects of professional conduct of health information professionals include; the maintenance of confidentiality and integrity, meeting the compliance and quality requirements, communicating and collaborating with the stakeholders, ongoing professional development to meet the industry requirement, and fulfilling the professional expectations of the healthcare institution/industry.

Provide Description / required tools:

Performance Criteria	Indicators		
	Knowledge	Skill	Behaviors
Demonstrates comprehensive knowledge of healthcare systems, policies, and regulations	1. Understanding of the structure and organization of healthcare systems. 2. Knowledge of healthcare policies, regulations, and standards. 3. Familiarity with healthcare reimbursement models and insurance systems. 4. Understanding of the legal and ethical aspects of healthcare information management. 5. Knowledge of healthcare terminology, medical coding systems (such as ICD-10, CPT), and classification systems (such as DRG, APC).	1. Ability to interpret and apply healthcare policies and regulations. 2. Proficiency in analyzing healthcare system components and their interrelationships. 3. Skill in researching and staying updated on healthcare policies and emerging trends. 4. Competence in applying coding and classification systems accurately. 5. Ability to analyze healthcare data and generate meaningful reports.	1. Demonstrates professionalism and integrity in adhering to ethical guidelines and standards. 2. Displays a commitment to patient privacy, confidentiality, and data security. 3. Exhibits attention to detail and accuracy in handling health information. 4. Shows a proactive approach to ongoing learning and professional development. 5. Maintains a respectful and collaborative attitude in interdisciplinary healthcare teams.

	6. Awareness of healthcare data collection, storage, and retrieval processes. 7. Knowledge of healthcare quality improvement methodologies and initiatives.	6. Skill in utilizing health information management software and technology. 7. Proficiency in utilizing research methodologies and evidence-based practices in healthcare.	6. Takes responsibility for personal and professional growth in the field of health information management. 7. Displays adaptability and flexibility in navigating healthcare system changes and challenges.
Apply principles of health information management in various healthcare settings	1. Understanding of the role of health information management in different healthcare settings (hospitals, clinics, long-term care facilities, etc.). 2. Knowledge of electronic health record (EHR) systems, including their functionalities and implementation. 3. Familiarity with health information exchange (HIE) protocols and interoperability standards. 4. Knowledge of health informatics and healthcare data analytics. 5. Understanding of data management principles and database systems used in healthcare.	1. Proficiency in managing electronic health records and health information databases. 2. Skill in utilizing health information systems for data collection, storage, and retrieval. 3. Ability to effectively navigate and utilize health information exchange platforms. 4. Competence in applying health informatics and data analytics tools for decision-making. 5. Skill in implementing data management and data governance practices.	1. Demonstrates adaptability and openness to change in adopting new technologies and systems. 2. Exhibits strong problem-solving skills in addressing health information management challenges. 3. Displays a commitment to maintaining the accuracy and integrity of health information. 4. Communicates effectively with healthcare professionals, administrators, and patients. 5. Collaborates with interdisciplinary teams to ensure accurate and complete health information.

	6. Knowledge of healthcare information security, privacy, and confidentiality practices . 7. Awareness of healthcare information/informatics standards and best practices.	6. Proficiency in implementing privacy and security measures to protect health information. 7. Ability to effectively communicate health information using technology platforms.	6. Demonstrates a commitment to continuous improvement in health information management practices. 7. Exhibits resilience and professionalism in high-pressure healthcare environments.
Utilizes health information management standards and best practices	1. Familiarity with health information management standards, guidelines, and regulations of the country. 2. Understanding of data governance principles and data quality management. 3. Knowledge of healthcare accreditation requirements (e.g., NABH, Joint Commission). 4. Awareness of health information technology (HIT) systems and their functionalities. 5. Understanding of health information management workflows and processes.	1. Ability to implement and adhere to health information management standards and guidelines. 2. Proficiency in data governance practices, including data integrity, accuracy, and accessibility. 3. Skill in utilizing health information technology systems to support data management and analysis. 4. Ability to conduct data quality assessments and implement quality improvement measures. 5. Competence in ensuring compliance with healthcare regulations and accreditation requirements.	1. Demonstrates a commitment to upholding privacy, confidentiality, and security of health information. 2. Displays attention to detail and accuracy in managing and maintaining health information. 3. Exhibits a proactive approach to staying updated on industry best practices and emerging technologies. 4. Collaborates effectively with interdisciplinary teams to ensure consistent application of standards. 5. Demonstrates a commitment to continuous improvement in health information management practices.

	6. Knowledge of clinical coding and classification systems (e.g., ICD-10, ICPM, CPT). 7. Awareness of emerging trends and technologies in health information management.	6. Proficiency in utilizing health information management software and tools effectively. 7. Skill in conducting audits and internal reviews to assess and improve processes.	6. Displays strong communication skills in conveying the importance of standards and best practices to stakeholders. 7. Takes initiative in identifying and addressing gaps or areas for improvement in health information management processes.

4.3. Master of Science in Health Information Management (M.Sc. HIM) Curriculum

M. Sc. in Health Information Management

Introduction:

Health information management is a combination of business, science, and information technology. These professionals are managers: experts in processing, analyzing and reporting information vital to the health care industry, respected staff members who interact daily with the clinical and administrative staff, all of whom depend on health information to perform their jobs.

A blend of business and computer expertise, health information management links health care clinicians with information technology and is the bridge between patients' health information and health insurers, state and central government, and other regulating agencies.

Expectation of future postgraduates in supporting future healthcare

HIM professionals do not just work in hospitals. They work for accounting firms, insurance companies, information systems vendors, government agencies, pharmaceutical research companies, and others. Wide varieties of employers actively recruit health information managers. According to the department of labor, employment opportunities for Health Information Management (HIM) professionals continue to grow much faster that the average for all occupations. They may look for career choices not only in acute-care settings, but in all types of alternative care settings, as well as in education, business, and legal settings. Services provided in these areas range from technical to administrative, with emphasis being placed on the latter. As a vital member of the health care team, the health information manager is responsible for managing health information systems. This professional plans and develops health information systems that meet standards of accrediting and regulatory agencies. They also design health information systems appropriate for various sizes and types of health care facilities. A postgraduate serves as an advocate for privacy and confidentiality of health information and plans and offers in- service educational programs for health care personnel.

There are multiple job opportunities available to HIM graduates. The following is just a sample of jobs in various practice settings:

Traditional Settings	
Management, HIM (Medical Records)	Responsible for the day-to-day operations of an HIM Department, maintains a budget, oversees staff, and interacts with other hospital departments, plans for the department.
Tumor registry	Reviews, abstracts, and codes clinical cancer information in order to comply with government regulations. Maintains a database. Also
Coding	Reviews medical documentation and assigns appropriate diagnosis
Trauma registry (E.R.)	Collects, codes, and maintains data unique to trauma registry, maintains a database. Assists with research projects, performance improvement, and administrative planning.
Quality Improvement	Collect and summarize performance data, identify opportunities for improvement, and present data to other clinicians and administrative staff.
Release of Information	Track, process, and evaluate requests for release of medical information. Requires knowledge of central and state laws & regulations.
Patient Admissions	Responsible for patient admission, insurance verification, database maintenance. Oversees a staff, maintains a budget, and communicates with other hospital departments.
Compliance Auditor	Responsible for conducting chart audits, preparing reports, and reporting data. Also, develops policies and procedures for staff training.
Physician Accreditation	Maintains databases with physician information in order to provide data to administrative staff for physician accreditation.
Utilization Review	Works closely with clinicians to analyze patient records in order to determine admission criteria and use of resources for length of stay. Must be knowledgeable of insurance requirements.
Physician offices	Manages day-to-day operations of a physician office, including scheduling, billing, staffing, budgeting, and record keeping, and reporting.
Risk Management	Collects, evaluates, and maintains data concerning patient injuries, claims, worker's compensation, etc. Reports data to administrative staff and makes changes to policies and procedures as needed.

Non-Traditional Settings	
Consulting firms	Works with various clients to provide HIM expertise.
Government agencies	Possible job opportunities involve working with state and central government agencies.
Law firms	Provide HIM expertise to areas within health law, central and state regulations concerning health care.
Insurance companies	Work with various providers in order to negotiate contracts, assist clients with claims.
Correctional facilities	Maintain health records, perform quality reviews and assist in research studies.
Extended care facilities	Maintain health records to provide a continuum of care, comply with central and state regulations, conduct quality reviews, and maintain accreditation requirements.
Pharmaceutical Research Statistician, Clinical Trials Coordinator, Data Manager	Provides data management services in order to meet customer needs. Manages projects, staff, and timelines.
Information Technology System Analyst Project Manager Data Manager	Works with software vendors to design clinical software, provides training to end-user staff, assists with system installations, provides system support.
Medical Software Companies Software Designer Software Tester	Designs and develops databases, performs various software testing, assists clients with system installations.

Eligibility for admission:

Pass in any undergraduate program of 3 years duration or equivalent with minimum aggregate of 50% marks in any science group. A candidate also must have passed in English (CORE or selective or functional) as a subject of studies in the qualifying examination

OR

Any health science graduate with MBBS/ BAMS/ BHMS/BDS/Nursing/Allied Health Sciences or equivalent with minimum aggregate of 50% marks.

Provision for lateral entry

Lateral entry for BSc. HIM graduates with 50% of aggregate marks. They are eligible for lateral entry to second semester.

They have to complete their internship of 6 months to be eligible for lateral entry.

Selection procedure

Admission to MSc. H.I.M. (Health Information Management) program shall be made on the basis of eligibility and an entrance Test to be conducted for the purpose. No candidate will be admitted on any ground unless he/she has appeared in the admission test and interview.

Successful candidates on the basis of written Test will be called for the interview & shall have face an interview board. The interview board will include the Head of the Department of Health Information Management and Health of the Institution, whose recommendations shall be final for selection of students.

During subsequent counseling (s) the seat will be allotted as per the merit of the candidate depending on the availability of seats on that particular day.

Candidate who fails to attend the Medical Examination on the notified date(s) will forfeit the claim for admission and placement in the waiting list except permitted by the competent authority under special circumstances.

The name of the student(s) who remain(s) absent from classes for more than 15 days at a stretch after joining the said program will be struck off from the college rolls without giving any notice.

Duration of the program

The duration of certified study of the M.Sc. HIM program shall extend over a period of 2 (two) academic years/4 semesters of total of 2100 hours (840 hours of Theory and 660 hours of Practical Classes and 600 hours of project work and professional practice).

Medium of instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the program.

Attendance

No candidate shall be permitted to appear for any one of the parts of MSc.HIM degree examinations, unless he/ she has attended the classes in the subject for the prescribed period in an affiliated Institution recognized by this University and produces the necessary certificate of study, attendance, satisfactory conduct and progress from the Head of the Institution.

A candidate is required to put in a minimum of 75% of attendance in both theory paper and 90% in practical separately in each subject before admission to the examination. This relaxation in attendance includes for medical & any other reasons approved by head of the Institution.

A candidate lacking in the prescribed attendance and progress in any one of the subjects in theory and practical shall not be permitted to the specific subject examination where shortage of attendance is recorded.

Assessment

Marks Qualifying for a Pass

A candidate shall be declared to have passed the examination if he or she obtains the following qualifying marks:

Pass in a course will be reflected as grades. No candidate shall be declared to have passed in any course unless he/she obtains not less than **"E" grade.** For all courses (core / non-core), candidate should obtain a minimum of 50% (ESE) to be declared as pass.

Evaluation & Grading system criteria

Evaluation & grading **(Manual Relative grading)** of students shall be based on **GPA** (Grade point average) & **CGPA** (Cumulative grade point average).

The overall performance of a student in each semester is indicated by the Grade Point Average (GPA). The overall performance of the student for the entire program is indicated by the Cumulative Grade Point Average (CGPA).

Evaluation weightage

The final evaluation and grading for each subject shall be based on internal assessment components (50 percent weightage) and semester end examination (50 percent weightage) conducted by the University.

Weightage distribution

Item	Weightage (%)
Class participation/presentation	20%
Assignment & quizzes	10%
Sessional exams	20%
Semester end University exam	50%
Total	100%

Letter Grading System

Letter Grade	Credit value (Grade Value)
A+	**10**
A	**9**
B	**8**
C	**7**
D	**6**
E	**5**
F	**0**

Calculation of GPA & CGPA: An example is provided

Course code	Course	Credits (a)	Grade obtained by the student	Credit value (b)	Grade Points (a x b)
MH 01	Course - 1	4	E	6	24
MH 02	Course - 2	4	B	8	32
MH 03	Course - 3	3	A+	10	30
MH 04	Course - 4	4	C	7	28
MH 05	Course - 5	5	A	9	45
TOTAL		**20**	-	-	**159**

1st Semester GPA = Total grade points/total credits (159/20) = 7.95

Suppose in **2nd semester GPA** = **7** with respective course credit 22

Then 1st year CGPA = (7.95 x 20) + (7 x 22) / 20 + 22 = 7.1

Progression Criteria to higher semesters

There is no separate criteria / credits required in order to be promoted to the next academic year. However, in order to be eligible to appear for fourth semester (Theory / practical /project submission), the student should have cleared all his previous semesters (i.e. first, second and third).

The student must complete all the course work requirements by a **maximum ofdouble the program duration**. For e.g. 2 years' program, all the academic course work needs to be completed within 4 years. Failure to do so will result inexit from the program.

Credit Details:

Lectures:	1 hour/week	= 1 Credit
Tutorials:	1 hour/week	= 1 Credit
Practical:	2 hours/week	= 1 Credit
Project:	30hours/week	= 1 Credit

Credit Includes L – Lectures, T- Tutorials, P- Practical, and PR – Project.

Postgraduate Program Credit Requirements

A minimum of 86 credits are required for the M. Sc. in Health Information Management course

Model Curriculum Outline

SEMESTER – I

Course Code	Course Title	Credits Distribution (L, T & P are hours/week)				Marks
		L	T	P	C	Total
MHIM-01	Anatomy & Physiology	2	1	-	3	100
MHIM-02	Pharmacology	2	-	-	2	100
MHIM-03	Fundamentals of Computer Applications	1	-	2	2	100
MHIM-04	Medical Language	2	1	-	3	100
MHIM-05	Communication Skills	3	-	-	3	100
MHIM-06	Health Information Management - I	3	1	-	4	100
MHIM-07	Biostatistics and Research Methodology	3	1	-	4	100
MHIM-08	HIM Practicum	-	-	4	2	100
Total		**16**	**4**	**6**	**23**	**800**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC).						

SEMESTER – II

Course Code	Course Title	Credits Distribution (L, T & P are hours/week)				Marks
		L	T	P	C	Total
MHIM-09	Advanced Medical Language	2	1	-	3	100
MHIM-10	General Management	2	1		3	100
MHIM-11	Health Information Management - II	3	1	-	4	100
MHIM-12	Database Management System	1	-	2	2	100
MHIM-13	Disease classification system	1	-	4	3	100
MHIM-14	Medico-legal aspects of HIM	2	-	-	2	100
MHIM-15	HIM Practicum - II	-	1	4	3	100
Total		**11**	**4**	**10**	**20**	**700**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC).						

SEMESTER – III

Course Code	Course Title	Credits Distribution (L, T & P are hours/week)				Marks Distribution
		L	T	P	C	Total
MHIM-16	Recent advances in Health Information Management	3	1	-	4	100
MHIM-17	Quality Management in Healthcare	2	1	-	3	100
MHIM-18	Information Governance	2	1	-	3	100
MHIM-19	Operations Management	3	1	-	4	100
MHIM-20	Healthcare Informatics	2		2	3	100
MHIM-21	Clinical Coding Systems for Health Insurance	1	-	4	3	100
MHIM-22	Program Elective*	2	1	-	3	100
Total		**16**	**5**	**6**	**23**	**700**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC). *Any two of the electives can be offered and a student need to choose one elective.						

SEMESTER – IV

Course Code	Course Title	Credits Distribution (L, T & P are hours/week)				Marks Distribution
		L	T	P	C	Total
MHIM-23	Project	-	-	30	15	100
MHIM-24	HIM Professional Practices	-	-	10	5	100
Total					**20**	**200**
Note: The mark distribution comprises Internal Assessment Components (IAC) and End Semester Examination (ESE) or only Internal Assessment Components (IAC).						

Log notes for MSc. HIM program:

Introduction:

Every student must be provided with a standard log note from the beginning of the first year and same shall be used till the end of the program. A log note shall be a verified record of the progression of learner documenting the requisite knowledge, skills, attitude, and competencies acquired throughout the coursework.

Minimum requirements of a log notes:

- The log note should document the active learning process by the student and progression to achievement of competencies or pre-determined task.
- The log note shall be in accordance with the minimum course curriculum requirements prescribed for the program.
- The log note shall be an integral part of formative and continuous assessment of a student.
- A sample template for a log note with minimum requirements is provided below:

Institution Name **Department Name** **Program title:**							
Name of the student:				Roll No:			
Subject:				Year/Semester:			
Sub items:	Assignments/seminars/group activities/problem-based learning/ hospital postings/lab work/practical/self-directed learning /group projects/projects						
1	2	3	4	5	6	7	8
Name of the activity	Duration	Knowledge assessed	Competency assessed	Rating/ Score	Faculty decision	Faculty sign	Feedback received. Learner sign

Note: Same template can be replicated for different courses

First Semester

MHIM-01: Anatomy & Physiology

General Anatomy

- Anatomical Position and Anatomical terms
- Epithelium – Types and functions
- Connective tissue – fibres and cells
- Cartilage – type, structure and functions
- Bone – types, structure and blood supply
- Muscles – classification, structure and function
- Neuron – types and structure, typical spinal nerve
- Blood vessels – arteries, vein lymph vessels, lymph nodes, structure of lymph node
- Joints – classification, examples, structure of a typical synovial joint
- Classification of synovial joint

Respiratory System

Nasal Cavity, Larynx, Trachea, Thoracic Cage, Diaphragm, pleura, lungs

Cardiovascular system

Mediastinum, Pericardium, heart, blood supply and nerve supply of heart, blood vessels in thorax, thoracic duct, major arteries and veins of head and neck, Major arteries and veins of abdomen and pelvis

Gastrointestinal system

Tongue, salivary glands, pharynx, esophagus, stomach, small intestine, large intestine, rectums and anal canal, Difference between jejunum and large intestine, difference between small and large intestine, liver, extra-hepatic biliary apparatus, pancreas

Urinary System

Kidney, Ureter, urinary bladder, urethra

Male Reproductive System

Testes, spermatic cord, vas deferens, prostate, seminal vesicles and ejaculatory duct

Female Reproductive System

Uterus, uterine tube, ovary

Endocrine Glands

Pituitary gland, thyroid gland, parathyroid gland, suprarenal gland

Nervous System:

Central Nervous System
Spinal cord, Brain, External feature of medulla oblongata, cerebellum, Attachment of cranial nerve to the brain stem, Mid-brain, Diencephalon, Corpus striatum, Cerebral hemispheres, fiber system of brain, blood supply of brain, ventricle, CSF production and circulation

Special Senses

- Gross anatomy of eye
- Gross anatomy of external, middle and internal ear
- Skin

Physiology

1. Basic concepts and Nerve physiology

- Transport across cell membrane: Passive transport- diffusion, facilitated diffusion, osmosis; Active transport-primary and secondary active transport
- Body fluids: Distribution of total body water, ionic composition of body fluids
- Neuron: Differences in structure and function of myelinated and unmyelinated nerve fibres
- Resting membrane potential and Action potential

2. Muscle physiology

- Muscle: Classification, characteristic features of skeletal, cardiac and smooth muscles
- Skeletal muscle: Structure, types of muscle fibers, neuromuscular transmission, excitation contraction coupling, rigor mortis
- Smooth muscle: Types

3. Blood

- Composition and functions of blood
- Plasma proteins and their functions
- Red Blood Cells: Erythropoiesis- Stages and regulation
- Hemoglobin: Normal values, variations and functions
- White Blood Cells: Types, normal values and functions

- Platelets: Normal range, functions, purpura
- Coagulation or clotting of blood: Clotting factors, Intrinsic and extrinsic mechanisms, hemophilia
- Anticoagulants: Classification and examples
- Blood groups: ABO and Rh systems, importance of blood grouping, hazards of blood transfusion, erythroblastosis fetalis
- Functions of lymph

4. Cardiovascular system

- Structure and innervation of heart and blood vessels
- Cardiac muscle: Properties, Cardiac cycle
- Heart sounds: Differences between first and second heart sounds
- Electrocardiogram (ECG): waves, intervals and uses
- Heart rate: Normal value, variations, regulation
- Cardiac output: Definition, normal value, variations and regulation: role of heart rate, stroke volume and myocardial contractility, muscular exercise and cardiac output
- Blood pressure: Definition, normal value, factors influencing BP, short-term regulation

5. Respiratory system

- Organization: air passages, lungs, respiratory membrane
- Mechanism of breathing: Inspiration, expiration, pulmonary ventilation, alveolar ventilation
- Graphical representation of pressure changes during respiration
- Spirogram
- Oxygen transport: Forms, oxygen dissociation curve
- Carbon dioxide transport: Forms of transport, mechanism
- Regulation of respiration: neural and chemical regulation Cyanosis, hypoxia-types, types of hypoxia in which cyanosis occurs Definitions of apnea, dyspnea, asphyxia

6. Special senses

- Vision: Cross-section of eye
- Functions of aqueous humor
- Visual pathway, visual filed defects
- Accommodation to near vision, light reflex, refractory errors of the eye
- Visual acuity
- Hearing: Structure and functions of external, middle and inner ear
- Mechanism of hearing
- Vestibular apparatus: Parts and functions
- Receptors for taste and smell sensations

MHIM-02: Pharmacology

1. General Pharmacology

- Introduction
- Route of Drug Administration
- Pharmacokinetics
- Pharmacodynamics
- Drug Toxicity and Safety

2. Autonomic nervous system, including skeletal muscle relaxants

- Introduction to ANS
- Cholinergic drugs
- Anticholinergic drugs
- Neuromuscular blocking drugs
- Adrenergic drugs
- Adrenergic Receptor Antagonist

3. Central Nervous System

- Sedatives and Hypnotics
- Antiepileptic drugs
- Local anaesthetics
- General anaesthetics
- Opioids
- NSAIDs
- Psychopharmacology

4. Cardiovascular System

- Antihypertensives
- Antianginal drugs
- Congestive cardiac failure
- Hypolipidemics

5. Respiratory System

- Pharmacotherapy of cough
- Pharmacotherapy of Bronchial asthma

6. GIT

- Peptic ulcer
- Antiemetics
- Digitalis & related cardiac glycosides
- Laxatives and antidiarrhoeals

7. Chemotherapy

- General aspects
- Beta lactam antibiotics
- Cotrimoxazole
- Aminoglycosides
- Tetracyclines
- Macrolides
- Quinolones
- Antifungal agents
- Antiviral drugs
- Antitubercular drugs
- Antileprotic drugs
- Antimalarial drugs
- Antiamoebic drugs
- Antihelminthics
- Anticancer drugs

8. Hormones

- Corticosteroids
- Antidiabetic drugs
- Thyroid and antithyroid drugs

9. Special Topics

- Standard abbreviations and symbols used in prescription
- Sources of drug information – Pharmacopeias, non-official references, MIMS, medical journals, FDA – product information
- Drug nomenclature – Chemical, generic, official and trade name
- Prescription writing

MHIM-03: Fundamentals of Computer Applications

- Basics of Information Technology Introduction to Information Technology
- Introduction to computers, Hardware, Software, Microsoft Windows, Windows Accessories, Control Panel, Multi – Tasking Features of Windows, Microsoft Word (Basics, Formatting, Tables, Page design, Mail merges and creating documents).
- MS-PowerPoint (Toolbars, Drawing Palette, Working with slides)
- MS-Excel (Introduction Cell formatting, Charts and graphic objects, , Database, Pivot table, Data validation, , Dynamic data range and Controls, , File protection, what if analysis and templates), Assignment/Revision, To design and develop various standardized formats of patient health records.

MHIM-04: Medical Language

1. Introduction

- Origin of medical terms historical perspective
- Various uses and application of medical terms
- Purpose of learning medical terminology

2. Stem Words/Root

- Musculo-skeletal system
- Respiratory system
- Cardiovascular system
- Digestive system
- Endocrine system
- CNS system
- Urinary system
- Reproductive system
- Organs of special sense
- Integumentary system

3. Prefixes

- Definition
- Various Prefixes, meaning and example terms
- Pseudo Prefixes – meaning & Example terms

4. Suffixes

- Definition & Types of suffixes
- Various Suffixes, meaning and example terms

5. Surgical procedures (System wise)

- Musculo-skeletal system
- Respiratory system
- Cardiovascular system
- Digestive system
- Endocrine system
- CNS system
- Urinary system
- Reproductive system
- Organs of special sense

6. Disease, disorders and dysfunctions

- Musculo- skeletal system
- Respiratory system
- Digestive system

7. Common Medical Terms

Common medical terms and meaning of those terms

8. Signs and Symptoms

Common sign and symptoms of disease conditions

MHIM-05: Communication Skills

1. Grammar

- Sentence - types
- Comprehend the concepts andapply them in a professional setting
- Parts of Speech
- Degrees of Comparison
- Subject-verb Tenses
- Acitve and Passive voice
- Conjunctions
- Transformation ofsentences
- Reported Speech
- Sentence Structure
- Common errors inEnglish

2. Speaking Exercises

- Impromptu speech, persuasive speech, techniques of Group Discussion, making an individual presentation,interview techniques.
- Comprehend the concepts in communication skills and applythem in a professional setting

3. Communication Skills

Definition – Process,barriers

Kinds – Oral, Written,Verbal, non-verbal, How to improve communication skills

- Comprehend the concepts in communication skills and applythem in a professional setting
- Distinguish between formal andinformal communication

4. Listening Skills

- Process- Purpose -Types,
- Obstacles to listeningHow to improve – hearing, focused listening
- Listening- Video Talk-Discussion / Speech
- Organizing notes on lectures andlistening passages.
- Identify and distinguish main ideas from supporting details.
- Make use of contextual clues toinfer meanings of unfamiliar words from context.
- Identify speaker's purpose andtone

5. Reading Skills

- Types- Scanning, Skimming, Oral, Silent,Extensive
- Techniques of reading3Q3R
- Reading Comprehension
- Comprehend how word choice, syntax, grammar and text structure may vary with contextand purpose.
- Understand how to use language resources (e.g. dictionary and online resources) in order toassist their vocabulary development.

6. Writing Skills

- Writing paragraphsPrécis writing Essay writing Formal letters Resume
- Discuss and respond to content of a reading or listening passage
- Use communication strategies toparticipate in group and class discussions
- Select, compile, and synthesizeinformation for an oral presentation
- Evaluate and select sources forrelevance

MHIM-06: Health Information Management -

1. Characteristics of quality Health Information Management:

- Definition, Characteristics of Medical Record
- Values of Medical Record to various users
- Required Characteristics of entries in medical Records
- Source-oriented, Problem-oriented, and Integrated medical records
- Medical Record Forms and their Content
- Standard Order of Arrangement of Medical Record forms
- Analysis of Medical Record-Quantitative & Qualitative
- Incomplete Record Control
- Practical: Actual handling of medical records

2. Medical Records for different patient encounters with health care facility

- Ambulatory Care Records {Emergency & Outpatient Records]
- Clinical Records in Long Term Care and Rehabilitation Facilities

3. Filing Methods, Storage, and Retention

- Numbering and Filing Systems
- Filing
- Storage- Microfilming and Disk Storage
- Retention
- Registers & Indexes
- Record movement control & Tracking system

4. Organizational Aspects of the Centralized Admitting Services

- Principles of Identification of a Patient
- Methods of Collection of Identification Data
- Types of Central Admitting Services
- Admitting Policies
- Procedure Outlines for Admissions
- Flow of Records following Admissions
- Advantages of good Admitting Policies and Procedures

MHIM-07: Biostatistics & Research Methodology

- Define statistics
- List the uses of statistics in health science research
- Explain the role of Statistics in clinical and preventive Medicine.
- Differentiate qualitative and quantitative variableswith examples.
- Differentiate discrete and continuous variables withexamples.
- List the properties of various scales of measurementwith example.
- Define central tendency, measure of centraltendency.
- Define arithmetic mean, median and mode. List theproperties, situation for use, and examples. .
- Determine the three measures from raw data.
- Define and calculate quartiles and percentiles.
- Define measures of dispersion.
- Define, calculate and interpret range, quartile deviation, interquartile range, standard deviation,variance and coefficient of variation.
- Give the situation for the use of these measures.
- Describe the properties of Normal and StandardNormal Distribution with sketch.
- List the applications.
- Calculate probabilities recollecting the coverage of the intervals mean±SD, mean±2SD, mean±3SD.
- Define skewness and list the characteristics withsketch.
- Define kurtosis and list the characteristics withsketch.
- Define and differentiate parameter and statistic withexamples.
- Define the basic terms-population, sample, sampling,parameter, statistic, estimate and estimator.
- Define Point estimate.
- Define and Differentiate standard deviation andstandard error
- Define sampling distribution.
- Describe the importance of sampling distributions ofdifferent statistics.
- Determine the sampling distribution of sample mean, sample proportion, difference between two means, difference between two proportions (Large sample approximation)
- Calculate the standard error of mean, proportion, difference between two means, and difference between two proportions. (Large sampleapproximation).
- Construct and interpret confidence interval for mean, difference between two means, proportion, difference between two proportions (large sample approximation).
- Define /explain with example the concept of null hypothesis, alternative hypothesis, type I and type IIerrors. .
- Define level of significance, power of the test and p-value.
- Explain the difference between one sided and two-sided test.
- Give the situation for non-parametric tests. .

- List the differences, merits and demerits of non-parametric over parametric tests. .
- Explain the situation, hypothesis tested, assumptions and example for paired and unpaired t-test.
- Interpret the output of paired and unpaired t-test .
- Explain the situation, hypothesis tested, assumptions and example for one-way and repeated measures ANOVA .
- Explain the situation, hypothesis tested, assumptions and example for : Mann-Whitney U-test, Wilcoxon signed rank test, Kruskal-Wallis ANOVA and Friedman's ANOVA .
- Explain the situation, hypothesis tested, assumptions and example for Chi square test association/independence and McNemar's test for association .
- Computation and interpretation of chi-square test (2 x2table) and McNemar's test result Give example for positive and negative correlations..
- Explain different types of correlation with the help ofscatter diagrams. .
- Give the assumptions, properties, and interpretationof correlation coefficient..
- Explain the situation for the computation of Pearson's and Spearman's correlation coefficient. .
- Interpret coefficient of determination..
- Explain the situation, example, application and assumptions for linear and multiple regression..
- Interpret regression coefficients in simple andmultiple regression..
- Explain the need for sample size computation..
- Given the situation/ingredients, should be able to determine sample size for estimating mean and proportion, testing of difference in means and proportions of two groups..
- Explain the difference between rate, ratio, andproportion with example. .
- Calculate rate, ratio, and proportion .
- Define and calculate Incidence and prevalencerates..
- Explain the design, merits and demerits of Case report, case series analysis, prevalence studies andecological studies with example .
- Explain the design, analysis (2x2 table and odds ratio), merits and demerits ((unmatched and 1:1 matched design) of case control study with example..
- Explain the design, analysis (2x2 table and relative risk), merits and demerits of cohort study with example..
- Explain confounding with example. .
- List the methods to deal with confounding at designand analysis stage..
- Explain the design, analysis, merits and demerits ofRCT with example. .
- Explain the need of simple, block and stratifiedrandomization with example..
- Explain the need and type of blinding with example.
- Explain the situation for the use of logistic regression and survival analysis with example..

- Define Population, sample, sampling, and samplingframe. Give one example each..
- List the characteristics of a good sample..
- Differentiate and list the advantages and disadvantages of random and non- random samplingtechniques..
- Explain simple, stratified, systematic, cluster and multistage random sampling techniques with examples. List the merits and demerits of each ofthem..
- Explain Convenience, quota, judgment and snowballsampling with examples. List the merits and demerits of each of them..
- Explain the difference between sampling and non- sampling errors. Give example for sampling and non-sampling errors. List the methods to minimize these errors..
- Define Sensitivity, specificity, PPV and NPV. .
- Explain with example method of computation andinterpretation. .
- Explain with example, the situation for the application of Bland Altman plot, Kappa statistic. .
- Explain the interpretation of Kappa Statistics. .
- Explain the format of various research documents..

MHIM-08: HIM Practicum I

This first professional practice experience utilizes the applied areas of health information management (hospital facilities). Students will be exposed to a variety of health information management (HIM) applications such as Master Patient Index (MPI). HIM tasks include abstracting, chart tracking, document imaging, deficiency analysis, release of information, patient registration, transcription and functions of MRD. Students will submit reports after each areas of posting.

Second Semester

MHIM-09: Advanced Medical Language

1. Disease Terminology of Body Systems

Common and important disease conditions: Etiology & types, Main signs & symptomsComplications

- Cardiovascular & Lymphatic system diseases .
- Endocrine system diseases.
- Central Nervous systemdiseases .
- Mental and behavioraldisorders .
- Genitourinary systemdiseases .
- Male and female reproductive system disorders .
- disease Conditions ofpregnancy, child birth and puerperium .
- disease conditions of organsof special sense – eye & ear .
- Integumentary systemdiseases .

2. Terminology of infectious disease

Common and importantInfectious disease conditions: Etiology & types
Main signs & symptomsComplications

- Bacterial diseases .
- Viral diseases .
- Fungal diseases .
- Parasitic diseases .
- Sexually transmitted disease.

3. Terminology of Phobias

Common phobias andits meaning

4. Abbreviations

Common abbreviationsused in healthcare andits expansions

5. Terminology of Cancer

Important aspects ofcancer terminology, Neoplasm, types &characteristics, Cancer grading & staging, modes of spread &treatment , classification of cancer with examples .

7. Terminology of Immune system

Important aspects ofimmune system terminology, immune mechanism & types of immune system, Common terms of immunology.

MHIM-10: General Management

- Introduction to management
- Planning Tools and Techniques
- Organizing, Directing and Controlling
- Coordination and cooperation
- Decision Making
- Staffing
- Intradepartmental and Interdepartmental Relationships
- Managing Change and Innovation
- Understanding Groups and Teams
- Leadership
- Time Management
- Cost and efficiency

MHIM-11: Health Information Management – II

1. Internal and External Health Information Flow

- Importance of technology in healthinformation communication
- Role of Health Information System in internal and external health information flow
- Communication andHealth Information
- The health record as acommunication tool

2. Health Information Systems and application design and planning

- Information systems design, developmentand operation
- HIS and Phases in thedevelopment of HIS
- Types of health information systemsand technologies
- Architecture, models and frameworks for HIS
- National health information systems

3. Standards for Data Content, Health Information Exchange, and Interoperability

- Policies and proceduresfor information system access and use
- HIT standards for HIMpractices
- Health information systems interoperability(semantic, technical, functional)
- HIT standards for systems interoperability

4. Risk Management

- Risk reportingmechanisms
- Risk assessment
- Liability
- Compliance

MHIM-12: DBMS

1. Introduction to Database Management System

- Define the database, DatabaseManagement System .
- Compare the flat file with relational database management system

2. Microsoft ACCESS

- What is Microsoft Access? .
- List the different MS Access databaseobjects .
- Show table-configuring fields, key fields,defining relationship
- Show Inserting and modifying therecords

3. Introduction to filters, forms and reports

Filter Forms Sort Forms Sort Reports

- Show a form using wizard, design view,Insert, Delete and update the record using form
- Show sorting and filtering data usingforms
- Show a report using wizard and designview
- Analyse the report by sorting fields andgrouping

4. Writing and modifying queries

- Introduction to QueryModifying Query
- Show query-run, save, renaming aquery, multi-table query
- Show modifying a query-Parameter, simple and advanced queries

5. Charts and Import DATA

- Introduction to chartsImport data
- Demonstrate Visualizing the data usingcharts
- Demonstrate Importing data into tables

6. SQL

- Introduction to SQL
- SQL Syntax: create database sql query, create table SQL query, insert into SQL query, select SQL query
- Alter, Update ,Delete, Drop

MHIM-13: Disease classification system

1. International Classification of disease coding

- Introduction to Disease classificationsystem .
- Purpose and application .

2. ICD Guidelines & Structure

- History and development of ICD .
- General principles of disease classification.
- The basic structure and principles ofclassification of the ICD .
- How to use ICD – Tabular andAlphabetical Index .
- Basic coding guidelines .
- Rules and guidelines for morbidity andmortality coding .

3. Coding using alphabetical and tabular index of ICD 10th Revision

- Disease conditions of various bodysystems.
- Symptoms, signs and abnormal clinical/laboratory findings.
- Injury and poisoning .
- External causes of Morbidity and mortality.

4. ICD – O (oncology)

- Introduction, Purpose and uses.
- Various guidelines and principles for usingICD – O .
- How to use ICD – O for Morphology andhistology coding of malignancy .

5. Coding various cancer conditions and diagnosis using ICD-Oncology

- Topography Codes .
- Morphology Codes .

6. International Classification of Procedures in Medicine

- Introduction, Purpose and uses.
- Structure of ICPM .

7. Coding various procedures using ICPM

- Coding various procedures in Medicine.

8. ICD Coding practice

- Abstracting Medical records to identifycorrect diagnosis
- Coding various diagnosis and diseaseconditions with live record data

MHIM-14: Medico Legal Aspects of HIM

- Medical Ethics, Hippocratic Oath, and Code of Ethics for the HIM Professionals
- Ownership of the Medical Record
- Privileged Communication and confidentiality of Medical Records
- Release of Information: To the Patient, To Authorized Persons /Agencies Legal Implications of release of Information to unauthorized, Persons/Agencies.
- Consents: Different types and their validity, invalidity blanket, and improper consents.
- Corrections in identification data medical documentations
- Rights and responsibilities of patients
- Medical Record in a Court of Law
- Legal requirements in Retention of Medical Records

MHIM-15: HIM Practicum II

- This second professional practice experience takes place in a health information management department of an acute healthcare facility. Students are supervised by a qualified personnel assigned by the healthcare facility, and are provided with practical experiences that ground the theories acquired in prior coursework. The PPE focuses on departmental functions, quality assessment and performance improvement, computerized information systems, organizational resources and management, billing and reimbursement, document imaging, and the electronic health record.

Introduction of Health Informatics

1. Management of Health Information System and application

- Planning Health InformationSystem

2. Managing health information system

- Using Technologies to deliver healthcare:
- e-health and Telemedicine

3. Protection of healthcare information:

- Dimension of information protection, Legal Implication, Legal Protection,
- Ownership AndControl, Release of Information,
- HIPPA, Reengineering in Healthcare for Compliance

3. Impact of healthcare informatics on the socio-culture environment of healthcare

- Information needs and Challenges in Healthcare Environment,
- Advances In Healthcare Informatics in Clinical Area, Changes in Professional Practice due toadvances in healthcare informatics.
- Framework For Human Computer Interaction, Usability Assessment

4. Future Direction in health informatics

- Nine trends to predict the development of healthcare informatics, Future Study, Approach for predicting.
- Trends influencing healthcare informatics

Third Semester

MHIM-16: Recent Advances in Health Information Management

Advanced Topics in Health Information Management (Seminar)

Through regular seminars, students present the advancements in HIM and explore current issues relative to the field of Health Information Management in a rapidly changing healthcare delivery system based on the topics assigned by the faculty. An exploration of current issues related to health informatics including healthcare policy analysis and development, ethical issues, structure of healthcare delivery systems, assessment of population health, models of healthcare delivery, access, and quality of care issues. Following areas should be considered as seminar topics.

- Core and applied areas of Health Information Management
- Health Information privacy and security
- IT in Health care Management
- Health Care Financing Models
- Healthcare Policies and Standards
- Public Health Information Management
- Information Governance
- Digital health applications.

MHIM-17: Quality Management in Healthcare

1. Quality in Healthcare: Concepts & Practice

- Outline basic concepts of quality, definitionsand dimensions of quality .
- evolution of Quality concepts .
- Interpret healthcare quality concepts .
- Apply principles of quality management .
- Outline roles and responsibilities in qualityimprovement .

2. Importance of quality management in healthcare systems

- process for building a strategy for quality: Analysis, Strategy and implementation..
- Examine the components of the process : Analysis - stakeholder involvement, situationalanalysis, confirmation of health goals.
- Examine the components of the Strategy: Development of quality goals, choosing. interventions for quality .
- Infer six domains of quality intervention: Leadership, Information, patient and populationengagement, regulation and standards, organizational capacity and models of care. .
- Examine Implementation process, monitoring progress .

3. Quality Management Models

- Identify the types of quality measures in health care: structure measures, process measures, outcome measures and patient experience measures.
- Total Quality Management .

4. Quality improvement methods and models

- What is a quality improvement program.
- Identify the principles essential for quality improvement of care: Leadership, Measurement, Reliability, practitioner skills andthe marketplace. .
- Summarize quality improvement models : caremodel & lean model.
- Analyze quality improvement models : PDSAcycle & Six sigma .
- Discover quality improvement tools: flowcharts, cause effect diagrams, Pareto charts, run charts. .
- Illustrate healthcare accreditation: JCI andNABH .

5. Organizational responsibility in Quality health data management

- Identify the sources of data on health carequality.
- List components of data Quality .
- Demonstrate the importance of Data quality inHealth care.
- Data governance and Data standardization .

6. Application of quality management concepts in Health Information Management

- Summarize about good data and recordmanagement .
- Identify the health Information requirements for organization wide quality management

MHIM-18: Information Governance

1. Introduction to Information Governance

- Information governance, evolution, need,benefits,
- information governance maturitymodel
- Case Studies

2. Information Governance in Healthcare

- Introduction, Reason for IG in Healthcare, present healthcare scenario – Global & India
- Role of information governance in healthcare information management

3. Information Governance in Managing Healthcare Data

- Healthcare Data Structure,
- Management of Healthcare Data under Information Governance,– National & International

4. Information Technology to Support Information Governance

- Need of Information Technology in Information Governance
- Benefits of Information Technology
- Role of Information Technology in building informationgovernance, HIT standards

5. Stakeholders & Information Governance

- Stakeholder of Information Governance in Healthcare
- Stakeholders Expectation Towards Information Governance
- Role of Stakeholders in Building Information Governance

MHIM-19: Operations Management

- Introduction to operations management
- Historical Development and Basics of OperationsManagement
- Origin and background ofoperation Management .
- Objectives of Operations Management; Basic Functions of Business Organization; Activities of Operation Department; Scope and Functions of Operations Management.
- Strategic operations management, components of strategic management, various stages of strategicmanagement product and service design development,
- Service Design, Factors influencing service design.
- Process management, principles, Major process decisions and choices, process engineering and improvement, techniques used in evaluating process.
- Location and layout, layout planning, basic types of layouts, process layout, factors affecting layout.
- Capacity planning, Economies of scale, capacity planning tools
- Supply chain management, dynamics of supply chain management, best approaches for integrated supply chain, e-purchasing, criteria for certifying suppliers, competitive and corporate orientation, Bullwhip effect.
- Inventory management, Inventory control systems, ABC analysis, Assumptions for EDQ

MHIM-20: Healthcare Informatics

Major topics include the electronic health record, health information systems, repositories and data bases, enterprise-wide systems, laboratory, radiology (PACs) systems, voice recognition, physician order entry, telemedicine, decision support systems

- Major Theories SupportingHealth Informatics
- Explain the Domains, Subdomains, Tools and Application of Informatics in Healthcare. .
- Discuss the application of system theory in implementing hospital information system. .
- Describe the usage of change theory in implementing electronichealth records over paper-basedrecords.
- Management of Health Information System and application
- Planning Health InformationSystem
- Managing health information system
- Using Technologies to deliver healthcare:
- e-health and Telemedicine
- Overview of the Electronic Health Record (EHR)
- Hospital Information System (HIS) with Electronic Medical Records (EMR) or Electronic Health Information Management System.
- Interoperability & Health Information Exchanges
- Healthcare Workflow
- EHR – definitions – Components of EHR and examples of EHR practices
- Preliminary steps in implementation of EHR
- Issues and challenges in implementation of EHR
- Planning for the introduction of EHR
- Factors to be considered when developing EHR & implementation plan

MHIM-21: Clinical Coding Systems for Health Insurance

1. HCFA'S Common Procedural Coding System

- Common procedural coding systems

2. International Classification of Diseases-Tenth Revision-Clinical Modifications (ICD- 10-CM)

- International Classification of Diseases-10th Revision-Clinical Modifications (ICD-10-CM)
- Apply guidelines for coding
- Certain infections and parasitic diseases (A00-B99).
- Neoplasms (C00-D49) .
- Diseases of the Blood and Blood-Forming Organs and Certain Disorders Involving the Immune Mechanism (D50-D89)
- Endocrine, Nutritional, and Metabolic Diseases (E00-E89)
- Mental, Behavioral, and NeurodevelopmentalDisorders (F01-F99)
- Diseases of the Nervous System and Sense Organs (G00-G99) .
- Diseases of the Eye and Adnexa (H00-H59)
- Diseases of the Ear and Mastoid Process(H60-H95).
- Diseases of the Circulatory System (I00-I99)
- Diseases of the Respiratory System (J00-J99).
- Diseases of the Digestive System (K00-K94)
- Diseases of the Skin & Subcutaneous Tissues (L00-L99)
- Diseases of the Musculoskeletal System andConnective Tissue (M00-M99)
- Diseases of the Genitourinary System (N00-N99)
- Pregnancy, Childbirth, and the Puerperium(O00-O9A)
- Certain Conditions Originating in the Perinatal Period (P00-P96) .
- Congenital Malformations, Deformations, andChromosomal Abnormalities (Q00-Q99)
- Symptoms, Signs, and Abnormal Clinical and Laboratory Findings, Not Elsewhere Classified (R00-R99) .
- Injury, Poisoning, and Certain Other Consequences of External Causes (S00-T88)
- External Causes of Morbidity (V00-Y99)
- Factors Influencing Health Status and Contact with Health Services (Z00-Z99)

3. Current Procedural Terminology

- Identify the background information aboutCPT, its purpose and structure .
- Examine the various sections of CPT.
- Determine appropriate codes from .
- Evaluation and Management (E/M)
- Anesthesia
- Surgery
- Radiology
- Pathology/Laboratory
- Medicine
- Asses the requirement of punctuations & symbols, modifiers, CPT modifiers, facilitymodifiers, HCPCS modifiers .

Choose appropriate CPT codes & modifiers using Code location methods, CPT Symbol

MHIM-22: Program Elective

(Select an appropriate program elective from the program elective listed)

Fourth Semester

MHIM-23: Project/Dissertation

A project/dissertation focused on a real-world health information and informatics setting and application of problem-solving methods for development of solutions. This may include original research in the area of health information management, information systems and/or health informatics. Oral and written reports are required, including oral presentation and defense of the project.

MHIM-24: HIM Professional Practices

During the project work, students shall be exposed to supervised learning about various professional activities related to HIM in a hospital/industry setting. Students must submit a detailed report about the exposure at the end of the semester to the faculty coordinator.

Program Electives

A list of program electives is provided for a candidate to choose based on their interest. The curriculum should have a provision to offer a minimum of one program elective during the entire program duration. However, based on need up to two program electives can be made available across different semesters for a candidate to choose. A program elective in a particular semester must offer a minimum of two courses and a candidate can opt for any one specific course of their choice.

1. Information Technology and Systems

Broad coverage of technology concepts underlying modern computing and information management as well as survey of the field of health informatics to provide students with the foundation for the program of studies. Topics include overview of concepts in health informatics, information technology infrastructure, information systems management in healthcare, management IT challenges, interoperability and certification of computer systems, Internet, basic computer security including identity and access management, and meaningful use standards.

2. Information security and Risk Management

Implement the analysis and management of risk across information systems through the application of the enterprise defined risk management policy and procedure. Assess risk to the organization's business, and document potential risk and containment plans. Collect data from health information data sources used for risk management reporting, Organize data for risk management reporting, Explain principles of risk management, Discuss the importance of risk assessment and management in healthcare,

Develop and maintain a risk management program.: Define and make applicable a formal organizational strategy, scope, and culture to maintain safety and security of information including protected health information from external and internal threats (i.e., digital forensic for corporate investigations or intrusion investigation) and provide a platform for information security management where security policies are implemented and continuously monitored/enhanced. Integrate expertise external standards and best practices, Lead organizational initiatives related to integrity, confidentiality and availability of data stored on information systems and comply with all legal requirements

3. Healthcare Data Analytics

Management of large volumes of healthcare data has become a massive challenge to the administrators, care providers and researchers in a healthcare institution where the health informatics professional's play a key role in collecting, organizing, displaying and interpretingthe health care data properly to meet the need ofall stakeholders.To play these roles, the health informatics professional should acquire data analytic skills and its practical approach. On completing the module learner will be able to understand data analytics in collecting, analyzing, and interpreting the healthcare data using various analytics tool. Understand the various analytics concepts and methodology, collect and depict the healthcare data using various analytics tool, Analyze and examine the healthcare data using various analytics tool, Interpret the healthcare data using various analytics tool, Apply R in managing and interpreting healthcare data.

4. Healthcare Financing

The course is designed to help the students understand the concept of healthcare finance and health insurance. Students will be able to explain health account estimates of the World Health Organisation and National Health Accounts Estimates of India, list the various tools for the estimation of different heads of account in health budget. They would also be able to explain the indicators of Health Estimates through National Health Accounts, discuss the resource tracking and management framework of healthcare and explain the measures to increase the efficiency of
government spending. On completing the module learner will be able to explain the basics of health economics, describe the different types of health care finance, evaluate financial protection through insurance Mechanisms, explain the indicators of health estimation, understand the financial flow from government to primary health carelevel and measure the efficiency of healthcare funding

5. Clinical Documentation Improvement

This course enables the student to learn about thepurpose of Clinical Documentation (CDI) and the role of Clinical Documentation Specialist, provides an understanding on principles of CDI and benefits of CDI programs. This course will introduce the learner to various professional standards of CDI, documentation requirements, quality measures and clinical coding improvement opportunities. On completing the module learner will be able to define the benefits of CDI improvement programs and role of CDI specialist, Identify the areas of medical documentation improvements, Discover the significance of various clinical and diagnosis coding in CDI program, Apply knowledge of CDI methods in different areas of a healthcare settings

6. Entrepreneurship & Project planning

The course is designed to incorporate entrepreneurial orientation among students and it also facilitates student entrepreneurship activity. Thecourse enables the students to apply the theoretical and practical aspects of operations management, financing, government policies, and strategies taughtduring the course. Besides, this course also enables students to gain practical experience of working in a project mode, requiring interactions with the domain specialists to meet the managerial challenges of the project undertaken. On completing the module learner will be able to explain the process of innovation and new idea generation, analyse the business environment to identify business opportunities, evaluate and apply different entrepreneurial strategies, assess the new venture feasibility and risk evaluation, translate business idea into a business plan and approachinginvestors.

Professional Competencies

Health Information Management (HIM) professionals play a crucial role in managing the health information systems of the healthcare institution. They are expected to embody the highest standards of ethical behavior, competence, and professionalism in the field of health information management. This includes upholding patient confidentiality and privacy, complying with legal and regulatory requirements, and maintaining the integrity and accuracy of health information. They should continuously seek opportunities for professional development and stay updated with industry trends and best practices. Collaboration, effective communication, and a respectful approach in working with colleagues, healthcare professionals, and other stakeholders are essential for a Health Information Management Professional. They are required to actively contribute to the advancement of the health information management profession, engage in research and quality improvement initiatives, and advocate for the responsible and ethical use of health information.

Provide Description / required tools:

Performance Criteria	Indicators		
	Knowledge	**Skill**	**Behaviors**
Demonstrate exceptional academic performance, completing coursework with excellence, and engaging actively in academic discussions and activities.	1. In-depth understanding of health information management theories, principles, and concepts. 2. Proficiency in health data management, health informatics, healthcare regulations, privacy and security, and data analytics. 3. Comprehensive knowledge of coding and classification systems, electronic health records (EHRs), and healthcare data standards. 4. Familiarity with research methodologies and data analysis techniques relevant to health information management.	1. Effectively manage time to meet deadlines, balance coursework, assignments, and other academic responsibilities. 2. Apply critical thinking skills to analyze complex health information management problems, evaluate evidence, and propose effective solutions. 3. Articulate thoughts and ideas clearly and professionally in written assignments, presentations, and academic discussions. 4. Gather and evaluate relevant information from credible sources to support academic work and research projects.	1. Show a strong desire for continuous learning and improvement, actively seeking opportunities to expand knowledge and skills. 2. Actively participate in academic discussions, contribute thoughtfully to class activities, and engage with fellow students and professors. 3. Uphold academic integrity by maintaining honesty, originality, and ethical behavior in all academic work. 4. Demonstrate professionalism in all academic interactions, including being punctual, respectful, and collaborative with classmates and professors.

		5. Demonstrate accuracy, thoroughness, and attention to detail in coursework, assignments, and data analysis.	5. Take initiative in seeking additional resources, clarifying doubts, and going beyond the minimum requirements to excel academically.
Exhibit a comprehensive understanding of health information management principles, theories, and concepts, including health data management, health informatics, healthcare regulations, privacy and security, and emerging trends in the field.	1. Understanding of the lifecycle of health data, including collection, storage, retrieval, and analysis. 2. Knowledge of the use of information technology, electronic health records (EHRs), health information systems, and clinical decision support tools in healthcare. 3. Familiarity with relevant healthcare regulations and standards and Meaningful Use criteria.	1. Ability to analyze and interpret healthcare data using appropriate analytical tools and techniques. 2. Proficiency in managing health information systems, including EHRs, health information exchange platforms, and data repositories. 3. Skills in ensuring compliance with healthcare regulations, implementing privacy and security measures, and managing risk related to health information management.	1. Demonstrating a commitment to ongoing learning and staying updated with advancements in health information management principles, theories, and technologies. 2. Applying critical thinking skills to analyze complex problems, identify patterns, and develop innovative solutions in health information management. 3. Adhering to ethical principles, maintaining confidentiality, and respecting patient privacy rights in all aspects of health information management.

	4. Understanding of privacy and security considerations related to health information management, including data privacy laws, patient confidentiality, and information security measures. 5. Awareness of the latest developments and emerging trends in health information management, such as health data analytics, interoperability, telehealth, and artificial intelligence.	4. Ability to develop and execute strategic plans for health information management initiatives, considering organizational goals and industry trends. 5. Effective communication skills to educate stakeholders, advocate for best practices in health information management, and promote the use of health information technology.	4. Being open to change, embracing new technologies and practices, and adapting to evolving healthcare regulations and industry trends. 5. Working effectively in interdisciplinary teams, collaborating with healthcare professionals, IT staff, and other stakeholders to achieve common goals in health information management.
Possess the necessary professional competencies to excel in the health information management profession.	1. Understanding project management methodologies, tools, and techniques applicable to health information management projects.	1. Proficiency in planning, organizing, and managing health information management projects, including defining project scope, establishing timelines, allocating resources, and managing risks.	1. Demonstrating professional behavior, ethics, and integrity in all aspects of health information management practice.

	2. Familiarity with leadership theories and practices, including effective communication, decision-making, and team management. 3. Knowledge of critical thinking processes and strategies to analyze complex problems and make informed decisions. 4. Knowledge of problem-solving methodologies, such as root cause analysis, process improvement, and systems thinking.	2. Demonstrating leadership qualities, such as the ability to motivate and inspire others, facilitate teamwork, and guide individuals toward achieving common goals. 3. Applying critical thinking skills to analyze complex problems, evaluate information, and make data-driven decisions in health information management contexts. 4. Applying problem-solving techniques to identify and address challenges in health information management, such as workflow inefficiencies, data quality issues, or system implementation challenges.	2. Having a commitment to continuous learning, staying updated with industry trends and advancements, and seeking opportunities for professional development. 3. Taking ownership of tasks, demonstrating initiative in seeking solutions, and being accountable for the quality and timeliness of work. 4. Actively engaging in collaborative work, respecting diverse perspectives, and fostering a positive and supportive work environment.

	5. Understanding principles and techniques for effective written and oral communication in professional healthcare settings. 6. Knowledge of collaborative practices, team dynamics, and strategies for working effectively in interdisciplinary healthcare teams. 7. Awareness of the importance of being adaptable in a dynamic healthcare environment and willingness to embrace change.	5. Skillful communication in conveying ideas, information, and recommendations to diverse audiences, including healthcare professionals, administrators, and stakeholders. 6. Collaborating effectively with colleagues, healthcare professionals, and stakeholders to achieve shared objectives, leveraging diverse perspectives and skills. 7. Demonstrating flexibility and adaptability in responding to changes in technology, regulations, and healthcare practices, and proactively seeking opportunities for growth and learning.	5. Embracing change, being open to new ideas and approaches, and demonstrating resilience in the face of challenges. 6. Managing time efficiently, prioritizing tasks, and meeting deadlines in a fast-paced healthcare environment.

Demonstrate proficiency in health information management tasks, such as data analysis, electronic health record management, workflow optimization, and quality improvement initiatives.	1. Understanding of the functioning of healthcare organizations, clinical workflows, and healthcare delivery models. 2. Knowledge of various health information systems, electronic health records (EHRs), and their functionalities. 3. Understanding of data analysis techniques, statistical methods, and tools used for analyzing healthcare data.	1. Proficiency in analyzing and interpreting healthcare data to derive meaningful insights and support decision-making processes. 2. Ability to effectively manage electronic health record systems, including data entry, retrieval, and maintenance. 3. Skill in identifying inefficiencies in healthcare processes, analyzing workflow patterns, and implementing improvements for enhanced efficiency and productivity.	1. Demonstrating the ability to apply theoretical knowledge and concepts gained in the program to real-world healthcare settings during internships, fieldwork, or practicum experiences. 2. Being proactive in seeking opportunities to gain practical experience, demonstrating adaptability in diverse healthcare settings, and taking initiative to learn and contribute effectively. 3. Displaying meticulousness and accuracy in handling health information, ensuring data integrity and compliance with relevant standards and regulations.

	4. Knowledge of process improvement methodologies and techniques to optimize healthcare workflows. 5. Familiarity with quality improvement frameworks, methodologies, and tools used to enhance healthcare outcomes and patient safety.	4. Competence in identifying areas for quality improvement, applying improvement methodologies, and monitoring the impact of implemented changes. 5. Skills in managing health information assets, ensuring data integrity, privacy, and security, and adhering to legal and regulatory requirements.	4. Working collaboratively with healthcare professionals, colleagues, and stakeholders to understand their needs, gather data, and implement effective health information management solutions. 5. Having a mindset of continuous improvement, actively seeking feedback, reflecting on experiences, and incorporating learning to enhance proficiency in health information management tasks.
Demonstrate the ability to design and conduct research projects, analyze complex healthcare data, and draw evidence-based conclusions. Showcase proficiency in research methodologies, data collection, statistical analysis, and interpretation of findings.	1. Understanding of various research methodologies applicable to health information management, such as quantitative, qualitative, and mixed-methods approaches.	1. Ability to design research projects, including developing research protocols, selecting appropriate sampling methods, and designing data collection instruments.	1. Demonstrating a curiosity for research, an eagerness to explore new ideas, and a commitment to evidence-based practice in health information management.

	2. Knowledge of designing research studies, including defining research objectives, formulating research questions or hypotheses, and selecting appropriate study designs. 3. Familiarity with different data collection methods used in healthcare research, such as surveys, interviews, observations, and secondary data sources. 4. Understanding of statistical techniques and software used for analyzing healthcare data, including descriptive statistics, inferential statistics, regression analysis, and data visualization.	2. Proficiency in collecting and managing research data using appropriate methods and tools, ensuring data quality and accuracy. 3. Competence in using statistical software to analyze healthcare data, applying appropriate statistical tests and techniques, and interpreting the results. 4. Understanding of ethical considerations in research, including obtaining informed consent, protecting participant privacy, and complying with research ethics guidelines and regulations.	2. Displaying meticulousness in research design, data collection, and analysis to ensure accuracy and reliability of research findings. 3. Applying critical thinking skills to analyze complex healthcare data, identify patterns, and draw meaningful conclusions. 4. Engaging in collaborative research efforts, networking with researchers and experts in the field, and seeking opportunities for interdisciplinary research collaborations.

	5. Knowledge of interpreting research findings in the context of health information management, identifying patterns, relationships, and implications for practice.	5. Skill in conducting comprehensive literature reviews, identifying relevant studies, synthesizing existing knowledge, and identifying research gaps.	5. Demonstrating the ability to effectively communicate research findings through oral presentations, written reports, and publications.
Display a strong understanding of ethical principles and legal considerations in health information management. Adhere to patient privacy regulations, ensure data security, and maintain confidentiality in handling sensitive health information.	1. Understanding ethical principles, such as autonomy, beneficence, non-maleficence, and justice, and their application in health information management. 2. Familiarity with privacy laws and regulations relevant to health information management. 3. Knowledge of the importance of maintaining the confidentiality of patient information and the legal obligations surrounding patient privacy.	1. Skill in ensuring compliance with privacy regulations, including obtaining informed consent, securing patient data, and protecting patient privacy rights. 2. Ability to conduct risk assessments to identify potential vulnerabilities and develop strategies to mitigate data security risks. 3. Proficiency in implementing and managing data governance frameworks, policies, and procedures to safeguard health information.	1. Demonstrating ethical behavior, integrity, and professional conduct in all aspects of health information management, adhering to ethical guidelines and standards. 2. Valuing and upholding the trust placed in health information management professionals by maintaining confidentiality and safeguarding patient information. 3. Keeping updated with evolving privacy regulations and data security best practices, and actively seeking opportunities for professional development in the field of health information management.

	4. Understanding the principles and practices of data security, including risk assessment, access controls, encryption, and incident response. 5. Awareness of legal requirements, such as consent for data sharing, data retention, and reporting obligations, as they pertain to health information management.	4. Skillful handling of sensitive health information, maintaining confidentiality in all aspects of health information management practice. 5. Competence in responding to data breaches or privacy incidents, including appropriate notification, investigation, and mitigation measures.	4. Taking responsibility for ensuring the security and privacy of health information and adhering to organizational policies and procedures. 5. Advocating for patient privacy rights, promoting a culture of privacy and security, and educating others on ethical and legal considerations in health information management.
Exhibit leadership qualities and a commitment to professional growth. Engage in continuous learning, stay updated with advancements in health information management practices, participate in professional organizations, and contribute to the field through research, publications, or presentations.	1. Understanding various leadership theories and principles, including transformational leadership, situational leadership, and effective communication strategies. 2. Familiarity with healthcare management principles, healthcare policy, organizational behavior, and strategic planning.	1. Demonstrating effective leadership skills, including the ability to motivate and inspire others, communicate effectively, and manage teams. 2. Engaging in lifelong learning by actively seeking new knowledge, staying updated with advancements in health information management, and participating in professional development activities.	1. Demonstrating leadership qualities, taking initiative in projects and activities, and actively seeking opportunities to contribute to the field of health information management. 2. Showing a commitment to continuous learning, staying updated with industry advancements, and pursuing opportunities for professional growth and skill enhancement.

	3. Knowledge of emerging trends, technologies, and innovations in health information management, such as artificial intelligence, big data analytics, and interoperability. 4. Awareness of professional development resources, conferences, workshops, and certifications available in the field of health information management.	3. Applying critical thinking skills to analyze complex problems, identify innovative solutions, and make informed decisions. 4. Proficiency in conducting research, collecting and analyzing data, and effectively communicating research findings through publications, presentations, or posters. 5. Building professional networks, collaborating with colleagues and industry experts, and fostering relationships within the health information management community.	3. Actively participating in professional organizations, conferences, seminars, and workshops to network, share knowledge, and stay informed about the latest practices and trends in health information management. 4. Engaging in research activities, conducting studies, and contributing to the body of knowledge in health information management through publications, presentations, or participation in research conferences. 5. Sharing knowledge and experiences with peers, mentoring junior professionals, and contributing to the professional development of others in the field.

Chapter 5:
Guidelines for Ph. D Program

1. Minimum Guidelines for Doctor of Philosophy (Ph.D.) in Health Information Management domain

Introduction:

Every teaching institution shall create amble provisions for interested Health Information Management (HIM) professionals to carry out doctoral studies leading to the award of a Ph.D. The research can be carried out in any related areas of HIM domain predominantly of multidisciplinary nature. The institutions recognized for carrying out PhD studies shall be governed by the following minimum guidelines.

Eligibility criteria for admission to the Ph.D. program:

- A candidate seeking admission to a Ph.D. program shall have successfully completed a two-year Master's degree program after a four years undergraduate program with at least 55% marks in aggregate or its equivalent from a recognized university.
- The institution shall establish a selection process for Ph.D. candidates as per the norms of the affiliated universities or UGC.

Duration of the Program:

- A full-time Ph.D. program shall be for a minimum duration of three years including six months coursework and a maximum duration of six years.
- A part-time Ph.D. program shall be for a minimum duration of four years including a six-month coursework and a maximum duration of eight years.

Research Supervisor:

- Any regular Professor/Associate Professor of an institution/university with a minimum of five research publications in peer-reviewed journals of high repute after obtaining a Ph.D. degree shall be eligible to apply for guideship.

General Instructions:

The institutions interested in offering a Ph.D. program shall establish detailed guidelines for a Ph.D. program in accordance with the rules and regulations of respective affiliated universities or as per the norms of UGC.

Chapter 6:
Minimum Standards and requirements for starting HIM programs

1. Minimum standards to start B.Sc. Health Information Management / M.Sc. Health Information programs

Establishing a comprehensive manpower and infrastructure to support a Bachelor of Health Information Management / Master of Health Information Management program is essential for delivering high-quality education, fostering research and innovation, and preparing students for careers in the field of health information management.

Sl. No.	Requirement	Specification	Qualification & Experiences
1	**Manpower**	**Program Director/Head Coordinator:**	• Doctoral degree in health information management, health informatics, healthcare administration, or a related field. • Extensive experience in academia and/or the healthcare industry, preferably 10-15 years or more. • Strong leadership and organizational skills.
		Faculty Members/ Instructors: • Health Information Management • Basic Sciences • Management • Statistics • Computer Sciences	• Master's or doctoral degree in health information management, health informatics, healthcare administration, medical coding, data analytics, or a related field. • Teaching experience at the undergraduate or postgraduate level is preferred, typically 5-10 years or more.
		Technical Instructors:	• Bachelor's & Master's degree in health information management, health informatics, healthcare administration, medical coding, data analytics, or a related field. • Experience in health information management or related healthcare fields, typically 3-5 years or more. • Teaching experience is desirable.
		Lab assistant:	• Qualifications vary depending on the specific roles and responsibilities. • Lab assistant may have degrees or certifications in Computer sciences or IT, Experience of typically 1-3 years or more**.**

		Administrative Staff:	• Bachelor's degree in business administration, education, or a related field. • Experience in higher education administration, preferably in a healthcare or academic setting, typically 2-5 years or more. • Strong communication and organizational skills.
2	**Infrastructure**	**Laboratories:**	• Health information technology lab: Equipped with computers, software for health information systems, coding software, and databases. • Anatomy and physiology lab: Equipped with anatomical models, charts, and multimedia resources. • Data analysis lab: Equipped with statistical software for data analysis and visualization.
		Hospital Affiliation	• Partnerships with healthcare facilities and organizations to provide clinical practicum experiences for students. • Access to real-world hospital/healthcare settings (with minimum 100 bed capacity) for hands-on training and experiential learning.
		Classrooms and Lecture Halls:	• Equipped with audio-visual aids for effective teaching delivery. • Adequate seating capacity to accommodate students and faculty.
		Library and Information Resources:	• Physical and digital collections of textbooks, journals, research articles, and reference materials related to health information management. • Access to online databases and electronic resources relevant to HIM.
		Simulation Center: (If institution afford to establish)	• Provides simulated healthcare environments for hands-on training in health information management processes and procedures. • Includes simulated patient records and scenarios for coding, documentation, and data analysis exercises.

		Faculty Offices:	• Individual rooms/cubicles /shared workspace for faculty members to prepare lectures, conduct research, and meet with students. • Equipped with computers, internet access, and necessary software.
		Student Support Services:	• Academic advising and counseling services to support student success and progression through the program. • Career services to assist students with internships, job placements, and professional development.
		Administrative Offices:	• Individual offices or shared workspace for faculty members to prepare lectures, conduct research, and meet with students. • Equipped with computers, internet access, and necessary software.
		Technology Infrastructure:	• Individual offices or shared workspace for faculty members to prepare lectures, conduct research, and meet with students. • Equipped with computers, internet access, and necessary software.
		Research Facilities:	• Individual offices or shared workspace for faculty members to prepare lectures, conduct research, and meet with students. • Equipped with computers, internet access, and necessary software.
		Financial Resources:	• Campus buildings, classrooms, labs, offices, and common areas designed to meet accessibility standards and safety regulations. • Adequate parking facilities for students, faculty, and visitors.

2. Suggested List of Reference textbook and online materials

An institution offering HIM programs shall make necessary arrangements to procure/online access to a minimum set of textbooks/online resources in various semesters for students/faculty reference purpose. Institutions may provide additional learning resources such as periodicals, journals etc. as per the requirements.

1. Human Anatomy by Dr. B. D. Chaurasia (Vol 1,2,3,4)
2. Chaurasia's handbook of human anatomy Netter's Atlas
3. Basics of Medical Physiology,4th edition, D.Venkatesh, H.H.Sudhakar
4. Essential Pathology for Dental students, Harsh Mohan, 3rd edition,2010 Jaypee.
5. General and systemic pathology, JCE Underwood and S S Cross, 7thedition, 2018, Churchill Livingstone.
6. Essentials of Medical Pharmacology: K.D. Tripathi, Jaypee brothers medical publishers (P) Ltd, 8th edition, 2018
7. Principles of Pharmacology: H L Sharma and K. K Sharma, Paras Medical Publishers, 3rd edition, 2017
8. Lwanga SK, Tye CY, Ayeni O. Teaching health statistics: lesson and seminar outlines. World Health Organization, Marketing and Dissemination, 1211 Geneva 27, Switzerland; 1999.
9. 2. Health research methodology: a guide for training in research methods. World Health Organization; 2001.
10. Rao PS, Richard J. An Introduction to Biostatistics: A manual for students in health sciences. Prentice/Hall of India; 1996.
11. Mahajan BK, Khanal AB. Methods in biostatistics: for medical students and research workers. Jaypee Brothers Medical Publishers; 2010.
12. Wilson J. (2010) Essential of Research Methods, SAGE Publication
13. Introduction to Biostatistics: A Manual for Students in Health Sciences Sundar Rao P S S; Richard J
14. Cambridge English of American English – Cambridge University
15. Roach, Peter, James Hartman, Jane Setter, and Daniel Jones. Cambridge English Pronouncing Dictionary. Cambridge: Cambridge University Press, 2006. Print.
16. Meenakshi Raman & Sangita Sharma, Technical Communication; Principles and Practice, Oxford University Press, 2011.
17. David Green, Contemporary English Grammar, Structure and Composition, Macmillan, Bangalore, 2008.
18. Raymond Murphy, Essential English Grammar: A Self- Study Reference and Practice Book, Cambridge University Press, 2001
19. Easy Computer Basics- Michael Miller
20. Teach Yourself Basic Computer Skills - Moira Stephen
21. Microsoft Office for Dummies-Wallace Wang
22. New Perspectives Microsoft Office 365 & Excel 2019 Comprehensive
23. Baron, R. A., Byrne, D., & Mankowitz, B. H. (1977). *Psychology: Understanding behaviour*. Philadelphia: W.B. Saunders Co.
24. Feldman, R. S. (1993). *Understanding Psychology*. New York: McGraw-Hill.

25. Margaret A Skurka, Health Information Management
26. Nandina Davis, Introduction to Health Information Technology
27. Edna K Huffman, Medical Records Management
28. Michelle A Green, Mary Jo Bowie, Essentials of Health Information Management – Principles and Practice
29. Health Management- Vol-2, National Institute of Health & Family Welfare
30. C M Francis , Medical Ethics
31. S K Singhal, Medical ethics and Consumer Protection Act
32. BMA Publication, Medical Ethics today – Handbook of Ethics and Law
33. Dana C McWay, Legal Aspect of Health Information Management, Thomson Delmer Publication
34. Ethical Challenges in the Management of Health Information – 2nd Edition, AHIMA – J & B Publication
35. Benny Joseph, Environmental Studies, Tata McGraw-Hill Publishing Company Ltd., New Delhi (2008).
36. Student guide: Environment Reader for Universities, based on UGC syllabus published by Centre for Science and Environment, (2017).
37. P. M. Bhakshi. The Constitutution of India. Universal Law Publishing.(2017)
38. Dr. Durga Das Basu. Introduction to the Constitution of India. Lexis Nexis.(2013)
39. Medical Terminology; A system Approach- Barbara. A. Gylys, Mary Ellen Wedding
40. Medical Dictionary(Dorland's/Stedman/Oxford)
41. A.K, Jain. et al., (2008-5th Edition). Professional Communication Skills, 2008, New Delhi, S Chand and Company.
42. Raman, M., & Singh, P. (2012). Business communication. New Delhi: Oxford University Press.
43. Raman, M & Sharma S (2014). Technical Communication: Principles and Practice. Oxford University Press. New Delhi
44. Mike McGrath, "Access in easy steps". 2019
45. Steven Roman, "Access Database Design & Programming",1st edition
46. Healthcare Management: Organizational Design and Behaviour – Stephen M Shortell, A D. Kaluzny
47. Koontz, H, & Weihrich, H (2016). Essentials of Management: An International Perspective (8thed.), Tata McGraw Hills, New Delhi.
48. Robbins, S. (2017). Management, (13th ed.), Pearson Education, New Delhi.
49. Medical Record Management –By G.D Mowgli
50. Hospital Administration-By .B.N.Sakarkar
51. Health Information: Management of a Strategic Resource, 5th Edition. Mervat Abdelhak Mary Alice Hanken-
52. Mervat Abdelhak & Sara, Health Information: Management of a Strategic Resource
53. P S Tripathi & P N Reddy, Principles of Management
54. WHO / AITBS, Medical Records Manual – A guide for developing Countries
55. Kundar G D, Design of Total Quality in Healthcare.
56. Introduction to Healthcare Quality Management. Available at https://epdf.pub/introduction-to-healthcare-quality-management.html

57. A Donabedian, An introduction to Quality Assurance in Healthcare. Available at https://epdf.pub/an-introduction-to-quality-assurance-in-health-care.html
58. Mohan Bansal. Medical Informatics: A Primer. TMH 2003.
59. Paul Taylor. From Patient data to medical knowledge: The principles and Practice of Health Informatics. Blackwell Publication
60. Introduction to healthcare economics & Financial Management- Susan. J.Penner
61. L. M Prasad, Organisational Behaviour, S. Chand Publishers, New Delhi
62. Schermerhorn, Hunt and Osborn : Managing Organisational Behaviour, John Wiley and Sons, New York 1994
63. Introduction to Health care informatics Susan .H.Fenton and Sue Biedermann (AHIMA Publication)
64. Guide to Health Informatics Enrico Ciera
65. WHO, Design and Implementation of Health Information System
66. Petrick W O Carroll, William A Yasnoff, David A Ross. Public Health Informatics and Information System. Springer Publication
67. Hospitals; Facilities, Planning & Management- G. D. Kunder
68. Hospital Management module II- NIHFW, New Delhi
69. Medical Transcription (2005) by Blanche Ettinger, Alice G. Ettinger
70. International Classification of Diseases, 10th revision – volumes 1, 2 &3. Published by WHO
71. Physicians' Handbook on Medical Certification of Death (4/2003)
72. Training manual on health insurance, published by by Institute of Public Health in collaboration with WHO.
73. Planning and Implementing health insurance programs in India-A guide N.Devadasan
74. Health Policies, National Health Portal of India. Available at https://www.nhp.gov.in/health-policies_pg
75. K V Ramani, Global Public Health Policies: Case studies from India on planning and implementation. Business Express Press
76. S L Geol, Dr R Kumar, Hospital Administration and Management
77. Robert F Smallwood. Information Governance: Concept, Strategies and Best Practice. April 2014. Wiley Publication
78. John Lannrelli, Micheal O"Shaughnessy. Information Governance and Security. 2015 Edition. Elsevier
79. *ICD-10-PCS Reference Manual". Centers for Medicare & Medicaid Services. 2019.*
80. Development of the ICD-10 Procedure Coding System (ICD-10-PCS) Richard F. Averill, M.S., Robert L. Mullin, M.D., Barbara A. Steinbeck, RHIT, Norbert I. Goldfield, M.D, Thelma M. Grant, RHIA, Rhonda R. Butler, CCS, CCS-P
81. Principles of Management - Tripathi P.C. & Reddy P.N.
82. Managing a modern hospital - A.V Srinivasan -Response books SAGE
83. Human resource management – Dr. C.B. Gupta – Sultan and Sons publishing
84. Human resource management and Personnel management - K. Aswathappa – Tata Mc Graw Hill publishing company
85. Clinical Documentation Improvement, Principle and Practice. Pamela Carroll Hess, MA, RHIA, CCS, CDIP, CPC, AHIMA Press, ISBN 978-1-58426-502-3.

Chapter 7
Job Description

Chapter 7: Job Description for different cadre

Cadre - 1

A Health Information Management Assistant should be able to:

- Collect and maintain health record data
- Apply ICD codes as per the guidelines
- Identify, compile, abstract, and code patient data, using standard classification systems.
- Assign the patient to diagnosis-related groups (DRGs), using appropriate computer software.
- Enter data, such as demographic characteristics, history and extent of disease, diagnostic procedures, or treatment into computer.
- Comply with ethical aspects of health records and the information it contains
- Utilize basic descriptive, institutional healthcare statistics
- Process patient admission or discharge documents.
- Transcribe medical reports.

Cadre - 2

A Senior Health Information Management Assistant should be able to:

- Verify the documentation in the health record is timely, complete, and accurate
- Retrieve patient health information for physicians, technicians, or other medical personnel.
- Identify the legal use of health records and relevant documents
- Identify discrepancies between documentation and disease coding
- Resolve or clarify codes or diagnoses with conflicting, missing, or unclear information by consulting with doctors or others or by participating in the coding team's regular meetings.

Cadre - 3

A Health Information Management Technologist should be able to:

- Verify that documentation in the health record supports the diagnosis and reflects the patient's progress, clinical findings, and discharge status
- Manage clinical indices/ databases/registries
- Utilize appropriate technology for data collection, storage, analysis, and reporting of health information
- Apply data extraction methodologies
- Identify the threats to data integrity and validity
- Manage health information for reimbursement purpose

Cadre - 4

A Health Information Management Officer should be able to:

- Interpret health information standards
- Evaluate the accuracy of morbidity, mortality and procedural coding
- Analyze health information needs of stakeholders across the healthcare organization
- Evaluate health care data create meaningful presentations
- Analyze legal concepts and principles to the practice of HIM
- Contribute in the development of operational policies and procedures for health information exchange
- Release information to persons or agencies according to regulations

Cadre - 5

An Assistant Manager (HIM) should be able to:

- Interpret terminologies, vocabularies and classification systems
- Examine required documentation and record structures
- Comply with research administrative processes and policies
- Oversee policies and technologies to protect data integrity
- Evaluate staffing requirements and their performance
- Analyze statistical data for decision making
- Protect the security of medical records to ensure that confidentiality is maintained
- Analyze the security and privacy implications of electronic health data
- Evaluate health information systems and data storage requirements

Cadre - 6

A Deputy Manager (HIM) should be able to:

- Identify data standard policies for exchange of health information
- Evaluate data to create meaningful presentations
- Ensure a privacy and security infrastructure
- Create an environment to ensure compliance
- Apply principles of management in the health information services
- Perform quality assessment health information systems
- Demonstrate workflow concepts

Cadre -7

A Manager (HIM) should be able to:

- Monitor, assess and ensure effective use the use of department resources.
- Develop and maintain computerized record management system processes
- Develop and implement organizational policies and procedures for patient data services
- Oversee staff operations, business planning and budget development
- Plan and direct the health information management service areas, ensuring compliance with national and state regulatory requirements

ANNEX- 1

Allied and Healthcare Professions

Allied and healthcare professionals includes individuals involved with the delivery of health or healthcare related services, with qualification and competence in therapeutic, diagnostic, curative, preventive and/or rehabilitative interventions. They work in multidisciplinary health teams in varied healthcare settings including doctors (physicians and specialist), nurses and public health officials to promote, protect, treat and/or manage a person('s) physical, mental, social, emotional, environmental health and holistic well-being.

The wide variation in the understanding of the concept of allied and healthcare professional, better known as 'paramedic', the nomenclature, and functions has led to the poor image of allied and healthcare sciences in India. The use of the word paramedic itself limits the activities of AHPs in the system. Hence, it is imperative to adequately compensate these professionals based on their qualifications and specialties. Despite a huge demand for services from this sector, allied and healthcare sciences is highly fragmented. As per the report 'From Paramedics to Allied Health Sciences', in total 138 programs of varied levels were identified during the process. Although it is estimated that there may be many more programs which are yet to be identified.

Considering the lack of regulatory mechanism following 15 core professional groups (accounting for around 44 professions) has been enlisted below **(***The list is illustrative of the allied and healthcare professions. In future there may be addition or removal of certain professions based on the state of their regulation and standardization). It also needs a mention that most of these professions are not restricted to the professional groups under which they have been categorized, their role may extend to other professional services too. Similarly, the categorization is an indicative categorization, however this may evolve over time based on deeper understanding of the roles and responsibilities of each professional group:*

1. **Healthcare Professions**
    1. Optometry
    2. Physiotherapy
    3. Occupational Therapy
    4. Nutrition Sciences
    5. Physician Associate and Assistants

2. **Allied Health Professions**
    6. Cardiology, Vascular and Pulmonary Technology
    7. Medical Laboratory Sciences
    8. Medical Radiology and Imaging Technology
    9. Neurosciences Technology
    10. Non- direct and Administrative services
    11. Primary Care and Community services

12. Radiation Therapy
13. Renal Technology
14. Surgical and Anesthesia related Technology
15. Trauma Care Services

The above mentioned groups account for over 44 job profiles in the allied and healthcare space, which are as follows-

A. Healthcare Professions

1. Optometry
    a. Optometrist
2. Physiotherapy
    a. Physiotherapist
3. Occupational Therapy
    a. Occupational Therapist
4. Nutrition Sciences
    a. Nutritionist
    b. Dietitian
5. Physician Associate and Assistants
    a. Physician Associates and Assistants

B. Allied Health Professions

6. Surgical and anesthesia related technology
    a. Anesthesia Assistants and Technologist
    b. OT Technologist
    c. Endoscopy Technologist
7. Medical Laboratory Sciences
    a. Cyto-Technologist
    b. Dermatology/STD /Leprosy Lab Technologist
    c. Forensic Technologist
    d. Hemato-Technologist
    e. Histopath-Technologist
    f. Phlebotomist
    g. Medical and Clinical Lab Technologist
8. Medical Radiology and Imaging Technology
    a. Radiographer
    b. Radiologic /Imaging Technologist
    c. Diagnostic Medical Sonographer
9. Renal Technology
    a. Urology Technologist
    b. Dialysis Therapy Technologist

10. Radiation Therapy
    a. Radiotherapy Technologist
    b. Medical Dosimetrist
    c. Nuclear Medicine Technologist
11. Trauma Care Services
    a. Emergency Medical Technologist (paramedic)
    b. Critical Care/ICU Technologist
12. Neurosciences Technology
    a. EEG/END Technologist
    b. EMG Technologist
    c. Neuro Lab Technologist
    d. Sleep Lab Technologist
13. Cardiology, Vascular and Pulmonary Technology
    a. Cardiovascular Technologist
    b. ECG Technologist
    c. ECHO Technologist
    d. Perfusionist
    e. Pulmonary Function (PFT) Technologist
    f. Respiratory Therapist
14. Non- direct and Administrative Services
    a. Biomedical Engineers and Technologist
    b. Medical Assistant
    c. Medical Secretaries
    d. Medical Transcriptionist
    e. Health Information Management Technologist
15. Primary Care and community services
    a. Blood Bank Technologist
    b. Counselor- Integrated Behavioral Health Counselors, Palliative counselors etc.
    c. Sanitary Health Inspectors

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