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B.Tech Computer Science and Engineering
Specialization in Health Informatics-160 (2021-22)

B.Tech Computer Science and Engineering with Specialization in Health Informatics

Aliases

- Health care informatics
- Healthcare informatics
- Medical informatics
- Nursing informatics
- Clinical informatics
- Biomedical informatics

What is Health Informatics?

Information engineering applied to the field of health care, essentially the management and use of patient health care information.

Is it Multidisciplinary?

The disciplines involved includes Information science, Computer science, Social science, Behavioral science, Management science, and others

Subfields of Health informatics are...

Health care informatics includes sub-fields of

1. Clinical informatics, such as pathology informatics, clinical research informatics
2. Imaging informatics
3. Public health informatics
4. Community health informatics
5. Home health informatics
6. Nursing informatics
7. Medical informatics
8. Consumer health informatics
9. Clinical bioinformatics
10. Informatics for education and research in health and medicine
11. Pharmacy informatics.

Programme Educational Objectives

PEO1. Health informatics professionals use their knowledge of healthcare, information systems, databases, and information technology security to gather, store, interpret and manage the massive amount of data generated when care is provided to patients.

PEO2. They are typically competent in the language of medical coding, a classification system used across all countries to identify medical procedures

PEO3. Ensures that patient health information, such as medical history, treatments, and test results, are integrated, accessible, accurate and secure

PEO4. Utilize their communication skills is an everyday activity, as health informaticists meet and work closely with other healthcare professionals, such as Nurses, physicians, respiratory therapists, and physical therapists

PEO5. They also interact with IT professionals to improve the way data is generated, analyzed and presented.

Category	Total Credits
University Core	69
University Elective	21
Program Core	55
Program Elective	15
Total Credits	160

University Core -69

NATURAL SCIENCE CORE	23
BASIC ENGINEERING SCIENCE CORE	12
HUMANITIES, SOCIAL SCIENCES AND MANAGEMENT CORE	7
SKILL DEVELOPMENT COURSES	13
PROJECT AND INTERNSHIPS	14
Total Credits	69

NATURAL SCIENCE CORE (23)

S.NO	Sub.Code	Sub.Title	Type	Credits
1	PHY1001	Engineering Physics	LTP	4
2	CHY1005	Introduction to Computational Chemistry	LTP	4
3	MAT1001	Calculus and Laplace Transforms	LT	4
4	MAT2002	Discrete Mathematics and Graph Theory	LT	4
5	MAT3002	Applied Linear Algebra	LT	3
6	MAT3003	Probability, Statistics And Reliability	LT	4

BASIC ENGINEERING SCIENCE CORE (12)

S.NO	Sub.Code	Sub.Title	Type	Credits
1	DSN2096	Engineering Design	LT	2
2	MEE1007	Engineering Graphics	P	2
3	EEE1001	Electric circuits and systems	LTP	4
4	CSA2001	Fundamentals of AI andML	LTP	4

HUMANITIES, SOCIAL SCIENCES AND MANAGEMENT CORE (07)

S.NO	Sub.Code	Sub.Title	Type	Credits
1		Effective Communication	LT	3
2		Advanced Technical Communication skills	LT	2
3		Sustainable Technology	LT	2

SKILL DEVELOPMENT COURSES (13)

S.NO	Sub.Code	Sub.Title	Type	Credits
1	CSE1021	Introduction to Problem Solving and Programming	LP	4
2	CSE3002	Programming in Java	LP	3
3		Competitive coding Practices	LP	3
4		Skills for Employment	P	1
5		Quantitative Skills	LT	2

PROJECT AND INTERNSHIPS (14)

S.NO	Sub.Code	Sub.Title	Type	Credits
1	DSN2098	Project Exhibition -I	PJ	1
2	DSN2099	Project Exhibition -II	PJ	1
3	DSN3099	Engineering Project in Community Service	PJ	2
4		Semester Internship	PJ	4
5	DSN2097	Summer industrial Internship	PJ	1
6		Capstone Project	PJ	5

University Elective (21 credits)

NATURAL SCIENCE ELECTIVE	6
MULTIDISCIPLINARY ELECTIVE	6
HUMANITIES, SOCIAL SCIENCES ANDMANAGEMENT ELECTIVE	3
FREE ELECTIVES	6
Total Credits	21

NATURAL SCIENCE ELECTIVE (6)

S.NO	Sub.Code	Sub.Title	Type	Credits
1	MAT2003	Applied Numerical methods	LT	3
2	CHI***	Biomedical and Health Information Sciences	LT	3
3	CHY1002	Environmental Science	LT	3
4		Emerging Technologies in Health Care	LT	3
5		Information exchange and data retrieval	LT	3
6	CHY2007	Modeling And Simulation Of Biological Systems	LP	3
7	PHY2011	Biophysics	LT	3
		Biology for Engineers	LT	3

MULTIDISCIPLINARY ELECTIVE (06)

S.NO	Sub.Code	Sub.Title	Type	Credits
1		Human computer interaction	LT	3
2		Biometric and Security systems	LT	3
3	ECE4006	Sensors And lot	LP	3
4		Unmanned Aerial Vehicles	LT	3
5		Body Area Network	LT	3
6		Digital Fabrication	LT	3
7		Bio inspired design	LT	3
8		cyber Physical systems	LT	3
9		Foundations of Data Science	LP	3
10		Introduction to Linguistics	LT	3

HUMANITIES, SOCIAL SCIENCES AND
MANAGEMENT ELECTIVE (03)

S.NO	Sub.Code	Sub.Title	Type	Credits
1		Emotional intelligence	LT	3
2		Anthropology for engineers	LT	3
3		Principles of management and organizational behaviour	LT	3
4	BMT2017	International business	LT	3
5		Technology entrepreneurship	LT	3
6	MGT2004	Supply chain management	LT	3
7		Disaster recovery and business continuity management	LT	3
8		Judgement and decision making	LT	3
9		Operational management	LT	3
10		Engineering economics and financial accounting	LT	3
11		Human resource management	LT	3
12		Information systems	LT	3

FREE ELECTIVES (06)

S.NO	Sub.Code	Sub.Title	Type	Credits
1		ELECTIVE / SPECIALIZATION COURSES FROM OTHER SCHOOLS		
2		MOOC / CERTIFICATION COURSES		

Program Core(55 credits)

S.NO	Sub.Code	Sub.Title	Type	Credits
1	CSE2001	Object oriented programming with C++	LP	4
2	CHI***	Introduction to Health Informatics	LT	3
3	CHI***	Security and Privacy Policies and Regulations for Health Care	LT	3
4	CSA4008	Applied Machine Learning	LTP	4
5	CHI***	Medical Electronics	LT	3
6	CSD3001	Data Structure and Analysis of Algorithm using C	LTP	4
7	CHI***	Embedded systems design using ARM	LTP	4
8	CHI***	Healthcare Information Systems	LT	3
9	CSE3001	Database Management Systems	LTP	4
10	CSE3003	Operating Systems	LTP	4
11	CSE3006	Computer Networks	LTP	4
12	CHI***	Wearable Technology and applications	LP	3
13	CHI***	Healthcare Data Analytics	LP	3
14	CHI***	Deep Learning for Health Informatics	LP	3
15	CHI***	App Development for Healthcare Informatics	LP	3
16	CSE3010	Computer Vision	LT	3

Program Elective(15 credits)

S.NO	Sub.Code	Sub.Title	Type	Credits
1	CSA3007	Artificial Intelligence	LTP	3
2	CHI***	Medical Terminology for Health Information Management	LT	3
3	CHI***	Informatics for the Clinical Investigator	LT	3
4	CHI***	Theoretical Concepts of Clinical Decisions Support Systems	LT	3
5	CHI***	Practical Implementation of Clinical Decision Support Systems	LP	3
6	CHI***	Information Technology and Patient Safety	LT	3
7	CHI***	Applied Statistics for Health Data Science	LT	3
8	CHI***	Introduction to cyber physical systems	LT	3
9	CSA4014	Applications of AI in Healthcare	LT	3
10	CSA4003	Data Mining And Data Warehousing	LT	3
11	CSA4006	Natural Language Processing	LT	3
12	CHI***	AR/VR in Healthcare Informatics	LT	3
13	CHI***	Security aspects in Healthcare records	LT	3

Semester 1

S.NO	Sub.Code	Sub.Title	Cateogry	Type	Credits
1	MAT1001	Calculus and Laplace Transforms	UC-NSC	LT	4
2	PHY1001	Engineering Physics	UC-NSC	LTP	4
3	CSA2001	Fundamentals of AI andML	UC-BSC	LTP	4
4		Advanced Technical Communication skills	UC-HSM	LT	2
5	CSE1021	Introduction to Problem Solving and Programming	UC-SDC	LP	4
6	MEE1007	Engineering Graphics	UC-BSC	P	2
		Indian constitution / Indian heritage	NG		
Total					20

Semester 2

S.NO	Sub.Code	Sub.Title	Cateogry	Type	Credits
1	MAT3003	Probability, Statistics And Reliability	UC-NSC	LT	4
2	CHY1005	Introduction to Computational Chemistry	UC-NSC	LTP	4
3	EEE1001	Electric circuits and systems	UC-BSC	LTP	4
4		Effective Communication	UC-HSM	LT	3
5		Qantitative Skills	UC-SDC	LT	2
6	DSN2096	Engineering Design	UC-BSC	LT	2
7		Sustainable Technology	UC-HSM	LT	2
		Swachh Bharat	NG		
Total					21

Semester 3

S.NO	Sub.Code	Sub.Title	Category	Type	Credits
1	CHI***	Introduction to Health Informatics	PC	LT	3
2	MAT3002	Applied Linear Algebra	UC-NSC	LT	3
3	CSE2001	Object oriented programming with C++	PC	LP	4
4	CSE3003	Operating Systems	PC	LTP	4
5	CHY1002	NATURAL SCIENCE ELECTIVE-1	UE-NSE	LT	3
6	DSN2098	Project Exhibition -I	UC-PI	PJ	1
7		HUMANITIES, SOCIAL SCIENCES AND MANAGEMENT ELECTIVE	UE-HSM	LT	3
		Ethics and values	NG		
Total					21

Semester 4

S.NO	Sub.Code	Sub.Title	Category	Type	Credits
1	MAT2002	Discrete Mathematics and Graph Theory	UC-NSC	LT	4
2	CSE3002	Programming in Java	UC-SDC	LP	3
3	CHI***	Medical Electronics	PC	LT	3
4	CSD3001	Data Structure and Analysis of Algorithm using C	PC	LTP	4
5		NATURAL SCIENCE ELECTIVE-2	UE-NSE	LT	3
6	DSN2099	Project Exhibition -II	UC-PI	PJ	1
7		Program Elective-I	PE	LTP	3
		Open source software (Linux administration)	NG		
		Digital literacy	NG		
Total					21

Semester 5

S.NO	Sub.Code	Sub.Title	Category	Type	Credits
1	CSE3006	Computer Networks	PC	LTP	4
2	CSE3001	Database Management Systems	PC	LTP	4
3		Free elective-1	UE-Free	LT	3
4		Competitive coding Practices	UC-SDC	LP	3
5	DSN3099	Engineering Project in Community Service	UC-PI	PJ	2
6		Program elective -II	PE	LT	3
7	CHI***	Security and Privacy Policies and Regulations for Health Care	PC	LT	3
7		Skills for Employment	UC-SDC	P	1
Total					23

Semester 6

S.NO	Sub.Code	Sub.Title	Cateogry	Type	Credits
1	CHI***	App Development for Healthcare Informatics	PC	LP	3
2	CSA4008	Applied Machine Learning	PC	LTP	4
3		MULTIDISCIPLINARY ELECTIVE-1	UE-ME	LP	3
4		Program Elective-III	PE	LT	3
5		program Elective-IV	PE	LTP	3
6	DSN2097	Summer industrial Internship	UC-PI	PJ	1
7		MOOC / CERTIFICATION COURSES(Free elective-2)	UE-Free		3
8	CHI***	Embedded systems design using ARM	PC	LTP	4
Total					24

Semester 7

S.NO	Sub.Code	Sub.Title	Cateogry	Type	Credits
1	CSE3010	Computer Vision	PC	LT	3
2	CHI***	Healthcare Information Systems	PC	LT	3
3	CHI***	Deep Learning for Health Informatics	PC	LP	3
4	CHI***	Wearable devices and applications	PC	LP	3
5		Semester Internship	UC-PI	PJ	4
		MULTIDISCIPLINARY ELECTIVE-2	UE-ME	LP	3
	CHI***	Healthcare Data Analytics	PC	LP	3
6		Program Elective-V	PE		3
Total					25

Semester 8

S.NO	Sub.Code	Sub.Title	Cateogry	Type	Credits
1		Capstone Project	UC-PI	PJ	5
Total					5

