I.3.2.B Curriculum Framework For Integrated M.Sc. in Intelligent Health Systems

1. Program Title

Integrated M.Sc. in Intelligent Health Systems

With optional extension to:

Integrated M.Sc. Honors in Intelligent Health Systems

2. Program Positioning

The **Integrated M.Sc. in Intelligent Health Systems** is designed as a global health-technology talent architecture that prepares students to work at the intersection of:

Health sciences, medicine, hospital systems, public health, biomedical technologies, clinical data, artificial intelligence, digital health platforms, medical imaging, wearable intelligence, health informatics, generative AI, clinical decision support, medical devices, genomics, regulatory science and healthcare product innovation.

The Program is not merely an AI-in-healthcare degree. It is designed to create **healthcare intelligence professionals** who can understand real healthcare problems, work with clinical and biomedical data, build intelligent systems, validate AI models, design deployable digital health products, respect patient safety, and contribute to global health-tech companies and research ecosystems.

The Program is aligned to global company categories such as:

Global / Indian Company Category	Indicative Companies	Graduate Fitment
Medical devices and connected care	Medtronic, Abbott, Johnson & Johnson MedTech, Boston Scientific, Stryker, Philips, GE HealthCare, Siemens Healthineers, BPL Medical, Skanray, Meril	Medical Device AI Associate, SaMD Analyst, Connected Health Engineer
Imaging, diagnostics and radiology AI	Siemens Healthineers, GE HealthCare, Philips, Aidoc, Qure.ai, PathAI, HeartFlow, Niramai, Predible, Remidio	Medical Imaging AI Engineer, Radiology AI Analyst, Diagnostic AI Associate

Global / Indian Company Category	Indicative Companies	Graduate Fitment
EHR, HIS and health informatics	Epic, Oracle Health, InterSystems, Athenahealth, Innovaccer, HealthPlix, Eka Care, CrelioHealth, Attune, MocDoc	Health Informatics Specialist, FHIR Developer, EHR Product Analyst
Digital health and virtual care	Teladoc, Amwell, Doctolib, Hims & Hers, Ro, Practo, Tata 1mg, Apollo 24/7, MediBuddy, MFine	Digital Health Product Analyst, Virtual Care Systems Analyst
AI diagnostics and clinical AI	Tempus, Aidoc, Viz.ai, Qure.ai, PathAI, Abridge, Tricog, SigTuple, Dozee	Clinical AI Engineer, Clinical Decision Support Analyst
Wearables and remote monitoring	Dexcom, Oura, Masimo, ResMed, Omron, Garmin Health, Whoop, Dozee, BeatO, Fitterfly	Remote Monitoring Analyst, Wearable Data Intelligence Associate
Genomics and precision health	Illumina, 10x Genomics, Tempus, Med Genome, Strand Life Sciences, Mapmygenome, 4baseCare	Biomedical Data Scientist, Genomics Data Analyst
AI drug discovery and life sciences intelligence	Recursion, Insilico Medicine, Exscientia, Schrödinger, BenevolentAI, Strand Life Sciences, Elucidata	AI Drug Discovery Analyst, Biomedical AI Research Associate
Hospital intelligence and healthcare operations	GE HealthCare, Philips, Siemens Healthineers, Apollo Hospitals, Narayana Health, Manipal Hospitals, Max Healthcare, Aster DM Healthcare	Hospital Intelligence Analyst, Healthcare Operations Data Scientist

3. Program Philosophy

The Program follows the JSS GIFT academic philosophy:

Learn — build foundations in health, technology, computing, data and society.

Build — develop real systems, dashboards, prototypes, models and digital health products.

Experience — engage with hospitals, health systems, public health agencies, industry and community settings.

Discover — conduct research, problem discovery, clinical data interpretation and evidence generation.

Create — develop deployable intelligent health solutions, publications, patents, startup concepts and product prototypes.

Lead — develop ethics, communication, interdisciplinary collaboration, health technology leadership and global readiness.

The final graduate should be able to:

Think with science.
Reason with health data.
Understand healthcare systems.
Build with technology.
Validate with evidence.
Deploy with responsibility.
Act with patient safety.
Lead in global health technology.

4. Program Duration and Award Structure

4.1 Normal Duration

The Program shall be a five-year integrated Program:

Pre-Semester + Semester I to Semester X

Award requirement:

196 Qualifying Credits + 10 Binary Graded Credits

4.2 M.Sc. Honors Extension

Students proceeding to M.Sc. Honors shall complete:

Additional 32 Qualifying Credits

Total:

228 Qualifying Credits + 10 Binary Graded Credits

4.3 Optional Add-on Graduate Diploma

Students may additionally complete:

28 Add-on Credits

leading to:

Integrated M.Sc. with Add-on Graduate Diploma

The Add-on component shall be reflected separately from the degree component, as per the JSS GIFT framework.

5. Credit Architecture

Credit Category	Credits	Purpose
Qualifying Credits	196	Main degree credits
Binary Graded Credits	10	Mandatory completion-based institutional credits
Optional Add-on Credits	28	Add-on Graduate Diploma / Minor / Major / Research Major
M.Sc. Honors Extension	Additional 32	Advanced research / product / Industry residency pathway

6. Multiple Exit Structure

Stage	Cumulative Qualifying Credits	Award
End of Year 1	40	Certificate in Intelligent Health Systems
End of Year 2	80	Diploma in Intelligent Health Systems
End of Year 3	120 + 10 Binary	B.Sc. in Intelligent Health Systems
End of Year 4	160 + 10 Binary	B.Sc. Honors in Intelligent Health Systems
End of Year 5	196 + 10 Binary	Integrated M.Sc. in Intelligent Health Systems
End of Year 6	228 + 10 Binary	Integrated M.Sc. Honors in Intelligent Health Systems

7. Semester-wise Credit Distribution

Stage	Qualifying Credits
Pre-Semester	8
Semester I	12
Semester II	20
Semester III	20
Semester IV	20
Semester V	20
Semester VI	20
Semester VII	20
Semester VIII	20
Semester IX	20
Semester X	16

Stage	Qualifying Credits
Total	**196**

8. Pre-Semester Structure

Bridge to Global Intelligent Health Technology Education

Qualifying Credits: 8
Assessment: 100% Formative Assessment; No Summative Assessment

Course Code	Course Title	L:T:P	Credits	Company / Capability Fitment
GFT-PS1101	Mathematical and Health Data Readiness	0:2:0	2	Foundation for health data, biostatistics, ML and clinical analytics
GFT-PS1102	Computational Thinking and Problem Solving	0:1:1	2	Foundation for all health software, AI and product roles
GFT-PS1103	Digital Learning, AI Tools and Health Academic Readiness	0:1:1	2	Foundation for digital health, EHR, AI-assisted research
GFT-PS1104	Programming Readiness and Self-Practice Studio	0:0:2	2	Beginner pathway for Python, automation and health-tech prototyping

9. Semester I

Foundations of Science, Health Systems, Computing and Health Data

Qualifying Credits: 12

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS1101	Scientific Thinking, Human Health Systems and Global Health-Tech Orientation	2:1:1	4	All health-tech companies; builds healthcare systems awareness
GFT-IHS1102	Python Programming for Health Problem Solving	1:1:2	4	Qure.ai, Innovaccer, Dozee, HealthPlix, MedGenome; entry foundation for technical roles
GFT-IHS1103	Foundations of Health Data Literacy, Digital Health and Patient Data Systems	2:1:1	4	EHR, digital health, hospital platform and analytics companies

Semester I Portfolio Gate

Health-Tech Foundation Portfolio I

Students must produce:

1. Python notebooks
2. Health data representation exercises
3. Basic patient-data table models
4. Public health data visualization
5. Health problem discovery note

10. Semester II

Mathematics, Biostatistics, Programming and Health Data Foundations

Qualifying Credits: 20

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS1201	Mathematics, Linear Algebra and Matrix Methods for Health AI	2:1:1	4	AI diagnostics, imaging AI, biomedical AI
GFT-IHS1202	Probability, Biostatistics, Epidemiology and Clinical Model Evaluation Foundations	2:1:1	4	Clinical AI, public health intelligence, medical research
GFT-IHS1203	Programming Structures and Algorithmic Thinking for Health Applications	1:1:2	4	Digital health engineering, EHR platforms, AI engineering
GFT-IHS1204	Health Data Handling, Visualization and Exploratory Analysis	1:1:2	4	Health analytics, hospital intelligence, payer analytics
GFT-IHS1205	Mini Project I: Health Data Story, Problem Discovery and Evidence Report	0:1:3	4	Early portfolio for health analytics and digital health

Year 1 Exit

Certificate in Intelligent Health Systems

Company Fitment after Year 1

Capability	**Indicative Fitment**
Health data literacy	Health data trainee roles
Python basics	Health analytics intern
Scientific and health systems orientation	Hospital digital transformation assistant
Data visualization	Public health / hospital dashboard intern

11. Semester III

Human Biology, EHR, Health Data Models and Software Construction

Qualifying Credits: 20

Course Code	**Course Title**	**L:T:P**	**Credits**	**Company / Career Fitment**
GFT-IHS2101	Human Biology, Disease Systems and Medical Terminology for Intelligent Health	2:1:1	4	Clinical AI, EHR, digital health, diagnostics
GFT-IHS2102	Data Structures and Algorithms for Health Data Systems	1:1:2	4	Health software engineering, platform engineering
GFT-IHS2103	Electronic Health Records, FHIR, HL7 and Health Data Modelling	1:1:2	4	Epic, Oracle Health, InterSystems, Innovaccer, HealthPlix, Eka Care
GFT-IHS2104	Object-Oriented Design and Software Construction for Digital Health	1:1:2	4	Digital health product engineering
GFT-IHS2105	Technology-Integrated Health Systems Practice Lab I	0:1:3	4	EHR mini-builds, APIs, health data modelling

Semester III Portfolio Gate

EHR and Health Software Foundation Portfolio

Students must build:

1. Patient registration data model
2. Encounter and observation data model
3. FHIR-style resource representation
4. Simple EHR workflow prototype
5. Object-oriented digital health application

12. Semester IV

AI Foundations, Interoperability, APIs and Digital Health Products

Qualifying Credits: 20

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS2201	Foundations of Artificial Intelligence for Healthcare	2:1:1	4	AI diagnostics, clinical AI, health automation
GFT-IHS2202	Clinical Analytics, Public Health Analytics and Epidemiological Intelligence	2:1:1	4	Public health intelligence, hospital analytics, payer analytics
GFT-IHS2203	Health Data Engineering, FHIR APIs, DICOM and Interoperability	1:1:2	4	Epic, Oracle Health, InterSystems, Siemens, GE HealthCare, Philips
GFT-IHS2204	Cloud-Native Digital Health Application Engineering	1:1:2	4	Teladoc, Amwell, Doctolib, Practo, Apollo 24/7, Tata 1mg
GFT-IHS2205	Mini Project II: Digital Health Data Product Prototype	0:1:3	4	Digital health product portfolio

Mini Project II Requirement

Each student team must build a working digital health prototype with:

1. Database
2. API
3. FHIR-style health record structure
4. Dashboard

5. Authentication
6. User workflow
7. Deployment demo

Year 2 Exit

Diploma in Intelligent Health Systems

13. Semester V

Machine Learning, Wearables, IoMT and Hospital Intelligence

Qualifying Credits: 20

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS3101	Machine Learning for Health Data and Clinical Prediction	2:1:1	4	Qure.ai, Tricog, Tempus, Aidoc, Viz.ai, Dozee
GFT-IHS3102	Biomedical Signals, Wearables, Remote Monitoring and Internet of Medical Things	2:1:1	4	Dexcom, Oura, Masimo, ResMed, Omron, Dozee, BeatO
GFT-IHS3103	Hospital Intelligence, Patient Flow and Healthcare Operations Analytics	2:1:1	4	GE HealthCare, Philips, Siemens Healthineers, Apollo, Narayana Health
GFT-IHS3104	Human-Centred Design, Patient Experience and Health Communication	1:1:2	4	Digital health, telehealth, patient platforms
GFT-IHS3105	Applied Health ML Lab I	0:1:3	4	ML portfolio for clinical and hospital analytics

Applied Health ML Lab I

Students implement:

1. Risk prediction
2. Disease classification
3. Patient stratification
4. Hospital queue analytics
5. Wearable time-series exploration
6. Model evaluation report

14. Semester VI

Deep Learning, Clinical Decision Support, Research, Regulation and Responsible AI

Qualifying Credits: 20

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS3201	Deep Learning for Biomedical and Health Data	2:1:1	4	Medical AI, imaging AI, biomedical AI
GFT-IHS3202	Clinical Decision Support, Explainable AI and Clinical Validation	2:1:1	4	Aidoc, Viz.ai, Qure.ai, Tempus, PathAI, Tricog
GFT-IHS3203	Research Methodology and Scientific Writing for Health Data Science	2:1:1	4	Research labs, Ph.D., clinical research, biomedical AI
GFT-IHS3204	Responsible Health AI, Patient Safety, Privacy and Regulatory Foundations	2:1:1	4	Medtronic, Abbott, J&J MedTech, Siemens, Philips, GE HealthCare
GFT-IHS3205	Mini Project III: Validated Intelligent Health System Prototype	0:1:3	4	Clinical AI prototype portfolio

Regulatory Treatment in GFT-IHS354

The course shall introduce:

1. Software as a Medical Device
2. AI-enabled medical devices
3. FDA, CE/MDR and CDSCO orientation
4. ISO 13485 quality management concepts
5. IEC 62304 software life-cycle concepts
6. ISO 14971 risk management orientation
7. Patient safety and clinical accountability
8. Bias, fairness, explainability and human oversight
9. Privacy, consent and auditability

Year 3 Exit

B.Sc. in Intelligent Health Systems

15. Semester VII

Medical AI, Clinical NLP, Public Health Intelligence and Immersion

Qualifying Credits: 20

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS4101	Medical Imaging AI, DICOM, PACS and Visual Intelligence in Healthcare	2:1:1	4	Siemens Healthineers, GE HealthCare, Philips, Aidoc, Qure.ai, PathAI
GFT-IHS4102	Clinical NLP, Medical LLMs and Health Knowledge Extraction	2:1:1	4	Abridge, Epic, Oracle Health, Tempus, digital health platforms
GFT-IHS4103	Public Health Intelligence, Epidemiological Modelling and Disease Surveillance	2:1:1	4	Public health, government health analytics, disease surveillance systems
GFT-IHS4104	Global Health-Tech Domain Intelligence Elective I	2:1:1	4	Track-based specialization
GFT-IHS4105	Industry-Hospital Immersion I: Workflow, Data and Problem Definition	0:1:3	4	Hospital / company problem discovery

GFT-IHS4101 Treatment

Students must learn:

1. DICOM basics
2. PACS workflow
3. Radiology workflow
4. Classification
5. Segmentation

6. Detection
7. Explainability
8. Reader-study orientation
9. Validation report

GFT-IHS4102 Treatment

Students must learn:

1. Clinical notes
2. Discharge summaries
3. Entity extraction
4. Medical coding support
5. Clinical summarization
6. Medical LLM safety
7. Hallucination control
8. Health knowledge extraction

16. Semester VIII

GenAI, Decision Intelligence, MLOps, Cybersecurity and Product Engineering

Qualifying Credits: 20

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS4201	Medical LLMs, RAG, Health AI Agents and Safety Evaluation	2:1:1	4	Abridge, Epic, Oracle Health, Tempus, health knowledge platforms
GFT-IHS4202	Decision Intelligence, Causal Reasoning and Clinical Pathway Analytics	2:1:1	4	Clinical AI, hospital intelligence, payer analytics
GFT-IHS4203	Health AI MLOps, Cloud Deployment, Cybersecurity and Model Governance	1:1:2	4	Global health AI, cloud health platforms, medical AI deployment
GFT-IHS4204	Digital Health Product Management, Design Controls and Commercialization Studio	1:1:2	4	Teladoc, Practo, Apollo 24/7, product companies, startups

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS4205	Major Project I: Health AI Product / Research Prototype	0:1:3	4	Global portfolio artifact

Major Project I Deliverables

Each student/team must produce:

1. Problem definition
2. Clinical / hospital / public health context
3. Dataset sheet
4. Product requirements document
5. System architecture
6. Model card
7. Risk register
8. Ethical impact note
9. Validation report
10. Working prototype
11. Demo video
12. Portfolio page

Year 4 Exit

B.Sc. Honors in Intelligent Health Systems

17. Semester IX

Specialization, Clinical Validation, Scalable Health Platforms and Capstone Definition

Qualifying Credits: 20

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS5101	Specialization Elective I	2:1:1	4	Track-specific
GFT-IHS5102	Specialization Elective II	2:1:1	4	Track-specific
GFT-IHS5103	Clinical Validation, Real-World Evidence and Health AI Evaluation	2:1:1	4	AI diagnostics, med-tech, regulatory and clinical AI companies

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS5104	Scalable Health Platforms, Cloud Architecture and Interoperability	1:1:2	4	EHR, digital health, hospital platforms, cloud health systems
GFT-IHS5105	Capstone Phase I: Industry / Hospital / Research Product Definition	0:1:3	4	Capstone problem definition and industry/hospital mentor mapping

Semester IX Special Note

GFT-IHS5103 is a critical global-company-readiness course. It shall cover:

1. Sensitivity and specificity
2. AUROC and AUPRC
3. Calibration
4. Subgroup performance
5. Bias testing
6. External validation
7. Retrospective and prospective validation
8. Clinical utility
9. Real-world evidence
10. Safety and post-deployment monitoring

18. Semester X

Governance, Global Compliance and Capstone Completion

Qualifying Credits: 16

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
GFT-IHS5201	Specialization Elective III	2:1:1	4	Track-specific specialization depth
GFT-IHS5202	Health AI Governance, Regulation, Quality and Global Compliance	2:1:1	4	Med-tech, AI diagnostics, hospital platforms, global product companies
GFT-IHS5203	Capstone Phase II: Implementation, Validation,	0:2:6	8	Final global health-tech portfolio

Course Code	Course Title	L:T:P	Credits	Company / Career Fitment
	Dissertation and Product Portfolio			

Capstone Phase II Deliverables

The final capstone shall include:

1. Problem definition
2. Clinical / hospital / public health / industry context
3. Literature review
4. Dataset design or acquisition plan
5. System architecture
6. Model / product / platform implementation
7. Clinical or technical validation
8. Risk and safety analysis
9. Privacy and ethics analysis
10. Regulatory-style documentation
11. Dissertation
12. Final viva
13. Product demo
14. Portfolio publication

Year 5 Exit

Integrated M.Sc. in Intelligent Health Systems

With completion of 28 Add-on Credits:

Integrated M.Sc. in Intelligent Health Systems with Add-on Graduate Diploma

19. Global Health-Tech Specialization Tracks

Students shall choose one specialization pathway from Semester VII / VIII onwards, continuing into Semesters IX and X.

Track A: Clinical AI and Decision Intelligence

Company Fitment

Qure.ai, Aidoc, Viz.ai, Tempus, PathAI, Tricog, Abridge, SigTuple

Courses

1. Advanced Clinical AI
2. Clinical Prediction Models and Risk Stratification

3. Explainable AI and Clinical Validation
4. Medical AI Safety and Bias Evaluation
5. Clinical Decision Support System Design

Target Roles

1. Clinical AI Engineer
2. Medical AI Associate
3. Clinical Decision Support Analyst
4. Health AI Validation Analyst
5. Medical Data Scientist

Track B: Medical Imaging and Visual Intelligence

Company Fitment

Siemens Healthineers, GE HealthCare, Philips, Aidoc, Qure.ai, PathAI, HeartFlow, Niramai, Remidio

Courses

1. DICOM, PACS and Radiology Workflow
2. Advanced Medical Image Analysis
3. Pathology Image Intelligence
4. Imaging AI Validation and Reader Studies
5. Visual Decision Support Systems

Target Roles

1. Medical Imaging AI Engineer
2. Radiology AI Analyst
3. Pathology AI Associate
4. Visual Intelligence Specialist
5. Imaging Data Scientist

Track C: Health Informatics and Digital Health Platforms

Company Fitment

Epic, Oracle Health, InterSystems, Athenahealth, Innovaccer, HealthPlix, Eka Care, CrelioHealth, Attune, MocDoc

Courses

1. Advanced Health Informatics
2. FHIR, HL7 and Health Information Exchange
3. EHR Product Architecture
4. Health Information Governance
5. Digital Health Platform Engineering

Target Roles

1. Health Informatics Specialist
2. FHIR Developer
3. EHR Product Analyst
4. Health Data Platform Engineer
5. Digital Health Systems Analyst

Track D: Remote Monitoring, Wearables and Medical Device Intelligence

Company Fitment

Medtronic, Abbott, Dexcom, Oura, Masimo, ResMed, Omron, Garmin Health, Whoop, Dozee, BeatO, Fitterfly

Courses

1. Biomedical Signal Intelligence
2. Wearable and Remote Monitoring Analytics
3. Edge AI for Medical Devices
4. Device Data Pipelines and Safety
5. Software as a Medical Device and Connected Care Product Design

Target Roles

1. Remote Patient Monitoring Analyst
2. Wearable Data Intelligence Associate
3. Medical Device AI Associate
4. Connected Health Engineer
5. SaMD Product Analyst

Track E: Genomics, Precision Medicine and Biomedical Data Intelligence

Company Fitment

Illumina, 10x Genomics, Tempus, MedGenome, Strand Life Sciences, Mapmygenome, 4baseCare

Courses

1. Bioinformatics and Omics Data Foundations
2. Genomics Data Analytics
3. Precision Oncology Data Systems
4. Biomedical Knowledge Graphs
5. AI for Translational Health Research

Target Roles

1. Biomedical Data Scientist
2. Genomics Data Analyst

3. Precision Health AI Associate
4. Oncology Data Analyst
5. Translational Health Research Associate

Track F: AI for Drug Discovery and Life Sciences Intelligence

Company Fitment

Recursion, Insilico Medicine, Exscientia, Schrödinger, BenevolentAI, Strand Life Sciences, Elucidata

Courses

1. Computational Biology for AI
2. Molecular Data Representation
3. Biomedical Knowledge Graphs
4. AI for Drug Discovery
5. Generative AI for Molecules and Therapeutics

Target Roles

1. AI Drug Discovery Analyst
2. Computational Biology Associate
3. Biomedical AI Research Associate
4. Molecular Data Analyst
5. Life Sciences AI Associate

Track G: Hospital Intelligence and Healthcare Operations

Company Fitment

GE HealthCare, Philips, Siemens Healthineers, Apollo Hospitals, Narayana Health, Manipal Hospitals, Max Healthcare, Aster DM Healthcare

Courses

1. Hospital Operations Analytics
2. Patient Flow and Queue Intelligence
3. Healthcare Resource Optimization
4. Quality, Safety and Performance Analytics
5. Value-Based Care and Health Economics

Target Roles

1. Hospital Intelligence Analyst
2. Healthcare Operations Data Scientist
3. Patient Flow Analyst

4. Health Systems Consultant
5. Healthcare Performance Analyst

Track H: Generative AI and Health Knowledge Systems

Company Fitment

Abridge, Epic, Oracle Health, Tempus, Microsoft Health AI ecosystem, AWS Health AI ecosystem, health knowledge platforms

Courses

1. Medical LLM Engineering
2. RAG Systems for Medical Knowledge
3. Health AI Agents and Workflow Automation
4. Medical LLM Safety and Evaluation
5. Clinical Knowledge Graphs and Reasoning Systems

Target Roles

1. Health GenAI Engineer
2. Medical RAG Developer
3. Clinical Knowledge Systems Analyst
4. Health AI Agent Developer
5. Medical LLM Evaluation Analyst

20. Add-on Graduate Diploma Architecture

The existing Add-on structure shall be retained, but the titles shall become company pathway aligned.

Add-on Graduate Diploma	**Company Fitment**
Clinical AI and Medical Decision Systems	Qure.ai, Aidoc, Viz.ai, Tempus, PathAI, Tricog
Health Informatics and Interoperability	Epic, Oracle Health, InterSystems, Innovaccer, HealthPlix
Medical Imaging AI and Visual Intelligence	Siemens Healthineers, GE HealthCare, Philips, Qure.ai, Aidoc
Remote Monitoring and Medical Device Intelligence	Medtronic, Abbott, Dexcom, Oura, Masimo, Dozee
Genomics and Precision Health Intelligence	Illumina, Tempus, MedGenome, Strand Life Sciences

Add-on Graduate Diploma	Company Fitment
AI for Drug Discovery and Biomedical Intelligence	Recursion, Insilico, Exscientia, Schrödinger
Digital Health Product Engineering	Teladoc, Amwell, Doctolib, Practo, Apollo 24/7, Tata 1mg
Hospital Intelligence and Healthcare Operations	GE HealthCare, Philips, Siemens Healthineers, Apollo, Narayana Health

21. Binary Graded Credits

The 10 Binary Graded Credits shall remain unchanged as per JSS GIFT regulations.

Suggested Compulsory Binary Courses

Course Code	Course Title	L:T:P	Credits
GFT-BG101	Orientation to JSS GIFT Academic Culture	0:1:0	1
GFT-BG102	Communication and Learning Skills	0:1:0	1
GFT-BG103	Universal Human Values	0:1:0	1
GFT-BG104	Physical Fitness, Well-being and Personal Discipline	0:0:1	1
GFT-BG105	Constitution of India and Civic Responsibility	0:1:0	1
GFT-BG106	Environmental Studies and Sustainability	0:1:0	1

Choice-Based Binary Basket

Students may choose from:

1. Stories from Indian Independence
2. Gerontology and Ageing Society
3. Philosophical Thinking
4. Indian Knowledge Systems and Cultural Heritage
5. Gender Sensitization and Social Responsibility
6. Self-Empowerment and Life Skills
7. Personal Hygiene and Health Awareness
8. Sports, Games and Physical Participation

9. NCC / NSS / Student Affairs / Social Activity
10. Fix It Yourself: Practical Life Skills
11. Sustainability Practice
12. Mindfulness and Reflective Living

22. Progressive Portfolio Gates

Stage	Portfolio Gate	Evidence Required
End of Year 1	Health-Tech Foundation Portfolio	Python, health data visualization, basic EHR tables, health problem report
End of Year 2	Digital Health Application Portfolio	API, dashboard, FHIR-style data model, digital health prototype
End of Year 3	Clinical AI Prototype Portfolio	ML model, clinical evaluation report, safety reflection
End of Year 4	Health-Tech Product / Research Portfolio	PRD, model card, risk register, prototype, validation report
End of Year 5	Global Health-Tech Capstone Portfolio	Dissertation, working system, validation, deployment demo, regulatory-style documentation
End of Year 6	M.Sc. Honors Research / Product Portfolio	Paper / patent / product / clinical validation / residency output

23. Internship and Immersion Model

Year	Immersion Type	Expected Outcome
Year 1	Hospital and public health observation	Understand healthcare context
Year 2	Digital workflow and health data observation	Understand EHR, HIS, lab, pharmacy, diagnostics workflows
Year 3	Skill-based mini internship	Apply ML, data and digital health skills

Year	Immersion Type	Expected Outcome
Year 4	Hospital / health-tech company immersion	Define and solve real problems
Year 5	Industry / hospital / research capstone	Build validated intelligent health solution
Year 6 Honors	Research / product / company residency	Publication, patent, regulatory file or advanced product output

24. Assessment Architecture

The assessment framework shall remain as per JSS GIFT regulations:

Component	Weightage
Formative Assessment	70%
Summative Assessment	30%

However, for company-aligned readiness, assessment shall include:

1. Technical implementation
2. Health data interpretation
3. Clinical relevance
4. Product thinking
5. Validation evidence
6. Ethical and regulatory reflection
7. Portfolio documentation
8. Communication and presentation
9. Teamwork
10. Deployment maturity

25. M.Sc. Honors Extension

Global Health-Tech Research and Product Fellowship Year

Additional Credits: 32

The M.Sc. Honors pathway shall be positioned as a research-intensive and product-intensive advanced pathway.

Semester XI

Course Code	Course Title	L:T:P	Credits	Company / Research Fitment
GFT-IHSH6101	Global Health-Tech Research Seminar	2:1:1	4	Ph.D., R&D, clinical AI research
GFT-IHSH6102	Advanced Specialization Elective IV	2:1:1	4	Track depth
GFT-IHSH6103	Advanced Specialization Elective V	2:1:1	4	Track depth
GFT-IHSH6104	Industry / Hospital / Research Residency Phase I	0:1:3	4	Residency with hospital, company or research lab

Semester XII

Course Code	Course Title	L:T:P	Credits	Company / Research Fitment
GFT-IHSH6201	Advanced Specialization Elective VI	2:1:1	4	Track mastery
GFT-IHSH6202	Publication, Patent, Regulatory Dossier and Product Studio	1:1:2	4	R&D, patent, product, regulatory readiness
GFT-IHSH6203	M.Sc. Honors Thesis / Product / Clinical AI Validation Phase II	0:2:6	8	Doctoral, product leadership, advanced health-tech roles

26. M.Sc. Honors Output Requirement

Every M.Sc. Honors student should produce at least one major advanced output:

1. Submitted research paper
2. Patent disclosure
3. Validated clinical AI prototype
4. Health-tech product prototype

5. Regulatory-style technical file
6. Hospital deployment pilot
7. Real-world evidence report
8. Open-source health AI contribution
9. Industry residency certificate
10. Doctoral-level research proposal

27. Company-Fitment Map by Curriculum Layer

Curriculum Layer	**Company Fitment**
Python, data handling, visualization	Qure.ai, Dozee, Innovaccer, HealthPlix, MedGenome
EHR, FHIR, HL7, interoperability	Epic, Oracle Health, InterSystems, Athenahealth, Eka Care
DICOM, PACS, imaging AI	Siemens Healthineers, GE HealthCare, Philips, Aidoc, Qure.ai
ML, deep learning, clinical AI	Tempus, PathAI, Aidoc, Viz.ai, Qure.ai, Tricog
Wearables, IoMT, signals	Dexcom, Oura, Masimo, ResMed, Omron, Dozee
Product engineering, cloud, APIs	Teladoc, Amwell, Doctolib, Practo, Apollo 24/7
Genomics and biomedical data	Illumina, 10x Genomics, Tempus, MedGenome, Strand
AI drug discovery	Recursion, Insilico, Exscientia, Schrödinger
Hospital intelligence	GE HealthCare, Philips, Siemens, Apollo, Narayana Health
Regulatory, validation, safety	Medtronic, Abbott, J&J MedTech, Siemens, Philips, GE HealthCare

28. Program Outcomes

At the end of the Program, students shall be able to:

PO1: Scientific and Health Systems Reasoning

Apply scientific thinking, human health understanding and systems reasoning to complex healthcare problems.

PO2: Mathematical, Biostatistical and Epidemiological Reasoning

Use mathematics, probability, statistics, biostatistics and epidemiology for health data science and clinical model evaluation.

PO3: Computational and Programming Capability

Design algorithms, write programs and build software systems for digital health and intelligent healthcare applications.

PO4: Health Data Engineering and Interoperability

Acquire, model, clean, transform, exchange and interpret health data using standards such as FHIR, HL7, DICOM and clinical terminologies.

PO5: AI and Machine Learning for Healthcare

Design, train, evaluate and improve AI/ML models for clinical, public health, hospital, biomedical and patient-centric problems.

PO6: Medical AI and Clinical Decision Support

Build explainable, validated and responsible clinical decision support systems.

PO7: Digital Health Product Engineering

Design APIs, dashboards, platforms, workflows and cloud-native digital health products.

PO8: Medical Imaging, Wearables and Biomedical Intelligence

Work with medical images, biomedical signals, sensor data, remote monitoring data and biomedical datasets.

PO9: Generative AI and Health Knowledge Systems

Develop responsible medical LLM, RAG, health AI agent and clinical knowledge extraction systems.

PO10: Clinical Validation and Regulatory Awareness

Evaluate AI systems using clinical validation, real-world evidence, safety, quality and regulatory principles.

PO11: Research, Innovation and Product Capability

Conduct research, build prototypes, write papers, produce patents and develop deployable intelligent health solutions.

PO12: Professional and Global Health-Tech Readiness

Demonstrate communication, teamwork, leadership, portfolio maturity, ethical responsibility and global industry readiness.

29. Graduate Identity

A graduate of this Program shall be positioned as:

A global health-technology professional capable of understanding healthcare systems, reasoning with health data, building intelligent health solutions, validating AI systems, designing digital health products, working responsibly with patient data, and contributing to hospitals, public health systems, medical AI companies, med-tech companies, EHR platforms, genomics companies, life-science AI companies and digital health enterprises.

The M.Sc. Honors graduate shall be positioned as:

A research-intensive and product-intensive intelligent health systems professional capable of advanced clinical AI validation, publication, patent, regulatory documentation, product leadership, health-tech R&D and doctoral-level work.

30. Final Curriculum Intent

The revised curriculum keeps the JSS GIFT academic regulations intact, but changes the Program treatment into a **global health-tech talent engine**.

The learner progression becomes:

Readiness → Health Systems Foundations → Programming → Health Data → EHR and Interoperability → Digital Health Applications → Machine Learning → Wearables and Hospital Intelligence → Deep Learning → Clinical Decision Support → Regulation and Responsible AI → Medical Imaging → Clinical NLP → Public Health Intelligence → GenAI → MLOps and Cybersecurity → Product Engineering → Clinical Validation → Specialization → Capstone → Global Health-Tech Portfolio → M.Sc. Honors Research / Product / Residency.

The final promise is:

JSS GIFT will not merely produce graduates who know AI in healthcare. JSS GIFT will produce intelligent health systems professionals who can build,

validate, govern, deploy and lead the next generation of healthcare technology for global companies and human health systems.

