PSG Institute of Higher Learning

{The proposed deemed to be university applied under Distinct Category (Existing) as per Clause 7(2) of the UGC Regulations 2023}.

Name of the programme along with the justification as to how these programmes fit into the Distinct category

1 M.Sc. Biomedical Device Development (Five-Year Integrated Programme)

1.1 Basic information

Who is eligible for this course?	Students who completed HSc with an aggregate of 50% or above
Number of seats per year	40
What will be the placement opportunity if they exit after one year?	They may be employed as technical assistants in hospitals, etc.
What will be the placement opportunity if they exit after two years?	They may be employed as senior hospital technical assistants, industry technicians, etc.
What will be the placement opportunity if they exit after three years?	They may be employed as Physician Assistants, Hospital R & D Technicians, etc.
What will be the placement opportunity if they exit after four years?	They may be employed as Lecturer – PTC, Research Assistant, Clinical Research Organizer, Senior Physician Assistant in Hospital etc.
What will be the placement opportunity after they complete the course?	They may be employed as faculty members in academics, managers in health tech, research scientists, etc.

1.2 Course scheme:

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Course Code	Course Title	Hours/ Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
Semester I									
	Calculus and Its Applications	3	2	0	4	40	60	100	BS
	English For Professional Skills – Medical Terminology	3	0	0	3	40	60	100	HS
	Human Anatomy and Physiology	3	0	0	3	40	60	100	PC
	Problem Solving and C Programming	4	0	0	4	40	60	100	PC
	Medical Physics	4	0	0	4	40	60	100	PC
	Personality and Character Development	MC							
	Problem-Solving and C Programming Lab	0	0	4	2	60	40	100	PC
	Mathematical Foundations Lab	0	0	4	2	60	40	100	PC
	Hospital Visit – Radiation and Measurement Devices	0	0	4	2	60	40	100	EEC
Total		17	2	12	24	380	420	800	
Semester II									
	Transforms and Partial Differential Equations	3	2	0	4	40	60	100	BS
	Data Structures and Algorithms	3	0	0	3	40	60	100	PC
	Electrical and Electronics Engineering	3	0	0	3	40	60	100	PC
	Mechanical Design and Drawing	3	2	0	4	40	60	100	PC
	Basics of Computational Biology	3	0	0	3	40	60	100	PC
	Data Structures Lab	0	0	4	2	60	40	100	PC

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	Electrical and Electronics Engineering Lab	0	0	4	2	60	40	100	PC
	Hospital Visit - Bioinformatics & Operation Theatre Transport Equipment	0	0	4	2	60	40	100	EEC
Total		15	4	12	23	380	420	800	
Semester III									
	Database Management system	3	0	0	3	40	60	100	PC
	Electronics and Linear Integrated Circuits	3	2	0	4	40	60	100	PC
	Biocompatible Materials and Flexible Stretchable Electronics	3	0	0	3	40	60	100	PC
	Biomedical Equipment & Instrumentation	4	0	0	4	40	60	100	PC
	Biosignal Processing	3	0	0	3	40	60	100	PC
	Electronic Devices and Circuits Lab	0	0	4	2	60	40	100	PC
	Biomedical Instrumentation & BIOPAC Data Acquisition System Lab	0	0	4	2	60	40	100	PC
	Hospital Visit - Prosthetics and Orthotics Devices	0	0	4	2	60	40	100	EEC
Total		16	2	12	23	380	420	800	
Semester IV									
	Finance and Project Management	3	0	0	3	40	60	100	HS
	Biomedical Product Development Cycle – Case Studies	3	0	0	3	40	60	100	PC
	Embedded Systems and IoT	3	2	0	4	40	60	100	PC
	Wearable Devices and Remote Sensing	4	0	0	4	40	60	100	PC

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	Medical Imaging and Radio Therapy	3	0	0	3	40	60	100	PC
	Special Elective (MC)	3/1	0	0	3/1	40	60	100	SE
	Embedded Systems and IoT Lab	0	0	4	2	60	40	100	PC
	Medical Imaging and Radio Therapy Lab	0	0	4	2	60	40	100	PC
	Hospital Visit - Ventilators and Infant Care	0	0	4	2	60	40	100	EEC
Total		19/17	2	12	26/24	440	460	900	
Semester V									
	Patient Monitoring System Development	4	0	0	4	40	60	100	PC
	Biomechanics in Device Design	3	0	0	3	40	60	100	PC
	Basics of Clinical Trials	3	0	0	3	40	60	100	PC
	Biostatistics	4	0	0	4	40	60	100	PC
	Professional Elective I	3	2	0	4	40	60	100	PE
	Biomechanics Lab	0	0	4	2	60	40	100	PC
	Biosensor Interface Lab	0	0	4	2	60	40	100	PC
	Hospital Visit - Patient Monitoring System	0	0	4	2	60	40	100	EEC
Total		17	2	12	24	380	420	800	
Semester VI									
	AI & Medical Diagnostics	3	0	0	3	40	60	100	PC
	Cloud Computing	3	0	0	3	40	60	100	PC
	Entrepreneurship – Device Manufacturer / Hospital	3	0	0	3	40	60	100	PC
	Ergonomics and Aesthetic Design of Medical Devices	3	0	0	3	40	60	100	PC
	Professional Elective II	3	0	0	3	40	60	100	PE
	AI & Medical Diagnostics Lab	0	0	4	2	60	40	100	PC
	Ergonomics Lab	0	0	4	2	60	40	100	PC

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	Hospital Visit - Surgery and Physiotherapy Equipment	0	0	4	2	60	40	100	EEC
Total		15	0	12	21	380	420	800	
Semester VII									
	Project Work I - Hospital/Biomedical Industry Project	0	0	-	12	60	40	100	EEC
Semester VIII									
	Ethics and Regulatory Standards	4	0	0	4	40	60	100	PC
	Biomedical Entrepreneurship	3	0	0	3	40	60	100	PC
	Block Chain and Machine Learning	3	0	0	4	40	60	100	PC
	Professional Elective III	3	2	0	4	40	60	100	PE
	Open Elective I	3	2	0	4	40	60	100	OE
	Data Analytics & Visualization Lab	0	0	4	2	60	40	100	PC
	Hospital Visit - Vital Parameter Analyzer	0	0	4	2	60	40	100	EEC
	Patient Monitoring System Development - Capstone Project I	0	0	4	2	60	40	100	EEC
Total		16	4	12	25	380	420	800	
Semester IX									
	Software and Hardware Security	3	0	0	3	40	60	100	PC
	Digital Image Processing and Computer Vision	3	0	0	3	40	60	100	PC
	Medical Ventilator, CT scan Equipment & Dialysis Equipment Design	3	0	0	3	40	60	100	PC
	Medical Science Document Writing	3	0	0	3	40	60	100	HS
	Open Elective II	3	2	0	4	40	60	100	OE

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	Design, Modelling and Digital Fabrication Lab	0	0	4	2	60	40	100	PC
	Hospital Visit - Therapeutic Equipment	0	0	4	2	60	40	100	EEC
	Development of Therapeutic Equipment - Capstone Project II	0	0	4	2	60	40	100	EEC
Total		15	2	12	22	380	420	800	
Semester X									
	Project Work II	0	0	-	12	60	40	100	EEC

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Professional Electives
Essentials of Cyber-Physical System Security
Environmental Science and Green Computing
Ethical Hacking
Electronic Medical Records
Biomedical Asset Management and Standardization
Virtual and Augmented Reality
Principles of Management and Behavioural Sciences
Regulatory Affairs in Biomedical Engineering
Clinical Engineering
Nuances of Nutrition
Design and Innovation in Healthcare
Cardiovascular Biomechanics
Drug Delivery Systems
Biomedical Data Analysis
Biomedical Product Design
VLSI Design and Fabrication
Integrated Circuit Testing and Reliability
Biomedical Device Prototyping and Testing
Medical Device Manufacturing Processes
Advanced Biomechanics
Clinical Trials and Medical Device Evaluation
Neural Interfaces and Brain-Computer Interfaces
Special Electives
Yoga, Cognition and Well-being
Contemplations from Yoga and Vedanta
Self-Awareness
Universal Human Values II
Open Electives
Biomedical Microdevices
Medical Robotics

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Biomedical Ethics
Nanobiotechnology
Entrepreneurship and Innovation
Environmental Science and Sustainability
Global Health and Development
Artificial Intelligence and Machine Learning
Digital Marketing
Creative Writing
Cyber Security and Privacy
Financial Management and Investments

CA – Continuous Assessment; FE - Final Examination; CAT – Category; BS – Basic Sciences; HS- Humanities & Social Sciences; ES- Engineering Sciences; PC – Professional Core; PE - Professional Elective; OE-Open Elective; EEC – Employability Enhancement Course; MC – Mandatory Course; L – Lecture; T-Tutorial; P - Practical; Tot - Total.

1.3 Distinctiveness of the Programme

- The above five-year integrated Programme aims to develop Biomedical Professionals capable of indigenous development of biomedical devices, as per the Make in India Policy of the Government.
- The programme is envisaged to be interdisciplinary, with input from science, engineering, medical, and management disciplines already available in the existing institutions under PSG Management.
- Each Programme plans to address the existing gap in the training of graduates in attitude refinement through in-depth courses in Personality and Character Development and Human Values and Ethics.
- Typical courses will be handled by collaborating industry personnel and doctors to enable the students to be industry-ready (Atma Nirbhar).
- MoUs will be signed with reputed biomedical R&D centres in India and hospitals to get industry input and student training regarding the manufacturing of biomedical equipment.
- Every semester, there is a Hospital Visit within the University campus for the students, which is aimed at understanding through hands-on Biomedical Devices being used in the field; dedicated medical/ technical professionals will accompany the students during the visit to hospitals

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- Two major projects, which are to be completed by way of internships in Biomedical Industries/ Hospitals – it is expected that the internships will be converted into placements.
- Capstone Projects (Semesters VIII and IX) provide opportunities for the students to design and develop prototypes of biomedical devices from a clear understanding of market requirements, standards, and safety measures, as well as technical requirements and cost.
- Periodic Visits by students to Medical Conferences and Product Exhibitions will expose them to state-of-the-art developments in the field
- Project evaluations will be strictly done based on presentations by students before a committee of medical and industry personnel to ensure quality.
- It is also expected that several entrepreneurs will be groomed to develop their start-ups with the support of PSG STEP (Science and Technology Entrepreneur Park) in PSG Institutions.

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2 M.Sc. Biological and Computational Sciences (Five-Year Integrated Programme)

2.1 Basic information

Who is eligible for this course?	Students who have completed HSc with an aggregate of 50% or above
Number of seats per year	40
What will be the placement opportunity if they exit after one year?	They may be employed as Technical Assistants.
What will be the placement opportunity if they exit after two years?	They may be employed as Senior Technical Assistants in Research Organizations, Technicians in Industry, etc.
What will be the placement opportunity if they exit after three years?	They may be employed as Biologist Assistants, Data Analysts, R & D Technicians, etc.
What will be the placement opportunity if they exit after four years?	They may be employed as Lecturer – PTC, Research Assistants, etc.
What will be the placement opportunity after they complete the course?	They may be employed as Faculty in Academics, Clinical Research Organizer, Research Scientist in Biological Sciences, Computational Biologist, Bioinformatics Specialist etc.

2.2 Course scheme:

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Course Code	Course Title	Hours/ Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
Semester I									
	Calculus and Its Applications	3	2	0	4	40	60	100	BS
	English For Professional Skills	3	0	0	3	40	60	100	HS
	Medical Physics	4	0	0	4	40	60	100	BS
	Problem Solving and C Programming	4	0	0	4	40	60	100	PC
	Computational Biology	3	2	0	4	40	60	100	PC
	Personality and Character Development	MC							
	Medical Physics Lab	0	0	4	2	60	40	100	BS
	Problem-Solving and C Programming Lab	0	0	4	2	60	40	100	PC
	Mathematical Foundations Lab	0	0	4	2	60	40	100	BS
Total		17	4	12	25	380	420	800	
Semester II									
	Transforms and Partial Differential Equations	3	2	0	4	40	60	100	BS
	Data Structures and Algorithms	3	0	0	3	40	60	100	PC
	Bio programming and Biostatistics	3	0	0	3	40	60	100	PC
	Plant and Animal Physiology	4	0	0	4	40	60	100	PC
	Molecular Cell Biology	3	2	0	4	40	60	100	PC
	Data Structures Lab	0	0	4	2	60	40	100	PC
	Bio programming and Biostatistics Lab	0	0	4	2	60	40	100	PC
	Molecular Cell Biology Lab	0	0	4	2	60	40	100	PC
Total		16	4	12	24	380	420	800	
Semester III									
	Biological Database Management system	3	0	0	3	40	60	100	PC

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	Structural Bioinformatics and Precision Medicine	3	2	0	4	40	60	100	PC
	Epidemiology and Biostatistics Basics	3	0	0	3	40	60	100	PC
	Operating Systems	4	0	0	4	40	60	100	PC
	Immunology and Immunotherapy	3	0	0	3	40	60	100	PC
	Biological Database Management System Lab	0	0	4	2	60	40	100	PC
	Bioinformatics – Tools and Techniques Lab	0	0	4	2	60	40	100	PC
	Operating Systems Lab	0	0	4	2	60	40	100	PC
Total		16	2	12	23	380	420	800	
Semester IV									
	Computational Finance and Project Management	3	0	0	3	40	60	100	HS
	Unix and R Programming	3	0	0	3	40	60	100	PC
	Genomic Tools in Biomedical Research	3	2	0	4	40	60	100	PC
	Molecular Genetics, Genomics and Proteomics	4	0	0	4	40	60	100	PC
	Applied Microbiology and Bioprocess Engineering	4	0	0	3	40	60	100	PC
	Special Elective (MC)	3/1	0	0	3/1	40	60	100	SE
	Unix and R Programming Lab	0	0	4	2	60	40	100	PC
	Genetic Engineering Lab	0	0	4	2	60	40	100	PC
	Applied Microbiology Lab	0	0	4	2	60	40	100	PC

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Total		20/18	2	12	26/24	420	460	000	
Semester V									
	Python for Bioinformatics	3	0	0	3	40	60	100	PC
	System Biology – Networks and Graph Theory	3	2	0	4	40	60	100	PC
	Biostatistics Advanced	3	0	0	3	40	60	100	PC
	Next Generation Sequencing	3	0	0	3	40	60	100	PC
	Professional Elective I	3	2	0	4	40	60	100	PE
	Perl for Bioinformatics Lab	0	0	4	2	60	40	100	PC
	Network Analysis in Systems Biology Lab	0	0	4	2	60	40	100	PC
	NGS Lab	0	0	4	2	60	40	100	PC
Total		15	4	12	23	380	420	800	
Semester VI									
	AI & Information Visualization	4	0	0	4	40	60	100	PC
	Food Biosecurity	3	0	3	3	40	60	100	PC
	Molecular biology Principles (RTPCR, NGS, Sanger)	3	0	0	3	40	60	100	PC
	Omics Based Technology	3	0	0	3	40	60	100	PC
	Professional Elective II	3	2	0	4	40	60	100	PE
	AI & Information Visualization Lab	0	0	4	2	60	40	100	PC
	Bioanalytical Tools (HPLC, LCMS) lab	0	0	4	2	60	40	100	PC
	Medical Scientific Documentation Writing	0	0	4	2	60	40	100	PC
Total		16	2	15	23	380	420	800	

Semester VII									
	Project Work I -	0	0	-	12	50	50	100	EEC
Semester VIII									
	Bioethics, Biosafety and IPR, GLP	3	0	0	3	40	60	100	PC
	Advanced Bioinformatics and Genome Sequencing	3	0	0	3	40	60	100	PC
	Machine Learning for Biology	3	0	0	4	40	60	100	PC
	Professional Elective III	3	2	0	4	40	60	100	PE
	Open Elective I	3	2	0	4	40	60	100	OE
	Data Analytics & Visualization Lab	0	0	4	2	60	40	100	PC
	Bioinformatics and Genome Sequencing Lab	0	0	4	2	60	40	100	PC
	Capstone Project I	0	0	4	2	60	40	100	PC
Total		15	4	12	24	380	420	800	
Semester IX									
	Software and Hardware Security	3	0	0	3	40	60	100	PC
	Digital Image Processing and Computer Vision	3	0	0	3	40	60	100	PC
	Molecular Modelling and Drug Design	3	0	0	3	40	60	100	PC
	Professional Elective IV	3	2	0	4	40	60	100	PE
	Open Elective II	3	2	0	4	40	60	100	OE
	Digital Image Processing and Computer Vision Lab	0	0	4	2	60	40	100	PC
	Molecular Modelling and Drug Synthesis Lab	0	0	4	2	60	40	100	PC
	Capstone Project II	0	0	4	2	60	40	100	EEC
Total		15	4	12	23	380	420	800	
Semester X									
	Project Work II	0	0	-	12	60	40	100	EEC

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Professional Electives
Biological Data Analysis
Algorithms for Molecular Dynamics Simulation
Genomics and Transcriptomics
Neuroscience and Technology
Biochemical Engineering
Bigdata Biology and Biological Databases
Comparative Genomics
Metagenomics
Population Genetics
Advanced Bioinformatics Programming
Functional Genomics
Cancer Genomics
Structural Biology and Molecular Modelling
Computational Immunology
Metabolic Modelling and Systems Biology
High-Throughput Sequencing Analysis
Special Electives
Yoga, Cognition and Well-being
Contemplations from Yoga and Vedanta
Self-Awareness
Universal Human Values II
Open Electives
Computational Ecology
Environmental Bioinformatics
Human Genomics
Microbial Genomics
Protein Structure Prediction
Regulatory Genomics
Synthetic Biology
Microarray Data Analysis

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Evolutionary Developmental Biology
Computational Proteomics
Neuroinformatics

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2.3 Distinctiveness of the Programme

- This five-year integrated Programme is aimed at developing Bioinformatics Professionals who are capable of indigenously synthesising new bio components and drugs, as per the Make in India Policy of the Government
- The programme is envisaged to be of an interdisciplinary nature, with input from science, engineering, medical, and management disciplines, which are already available in the existing institutions under PSG Management.
- Each Programme plans to address the existing gap in the training of graduates in the area of their attitude refinement through in-depth courses in Personality and Character Development and Human Values and Ethics
- Typical courses will be handled by collaborating industry R&D Research Labs to enable the students to be industry-ready (Aatma Nirbhar)
- MoUs will be signed with reputed Bioprocess R&D Labs in India to get research inputs and student training to bring out the inherent Research Potential and Creativity from the students
- Every semester, there is a visit to the state-of-the-art labs within the University campus to provide hands-on-training on Bioprocess being used in the field; dedicated medical/ technical professionals will accompany the students during their visit to Labs
- Two major projects, which are to be completed by way of internships in Bioprocess Research Labs – it is expected that the internships will be converted into placements/ higher studies abroad
- Capstone Projects (Semesters VIII and IX) provide opportunities for the students to apply Bioprocess Engineering concepts in the field from a clear understanding of market requirements, standards, and safety measures besides technical requirements and cost
- Periodic Visits by students to Bioprocess Conferences and Product Exhibitions will expose them to state-of-the-art developments in the field

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- Project evaluations will be strictly done based on presentations by students before a committee of Bioprocess industry personnel to ensure quality
- It is also expected that several entrepreneurs will be groomed to come up with their start-ups with the support of PSG STEP (Science and Technology Entrepreneur Park) in PSG Institutions

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3 MSc in Hospital Management & Accreditation

3.1 Basic information

Who is eligible for this course?	Any undergraduate degree (3- or 4-year duration) holder with a pass aggregate of 50% or above.
Number of seats per year	40
What will be the placement opportunity if they exit after one year?	They may be employed as Assistants to Hospital Operations Managers, Internal Auditors, Quality Assurance Officers, etc.
What will be the placement opportunity after they complete the course?	They may be employed as Hospital Operations Managers, Internal Auditors, Quality Assurance Officers etc.

3.2 Course scheme:

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Course code	Course title	Hours / week			Credits	Maximum Marks			Category
		L	T	P/C		CA	FE	Total	
SEMESTER 1									
	Basic Health Sciences	3	2	0	4	40	60	100	BS
	Introduction to Hospital Management and Accreditation	3	0	0	3	40	60	100	PC
	Healthcare Delivery Systems and Models	3	0	0	3	40	60	100	PC
	Introduction to Healthcare Policy and Regulations	3	0	0	3	40	60	100	PC
	Organizational Structure of Hospitals	3	0	0	3	40	60	100	PC
	Healthcare Leadership and Management Principles	3	0	0	3	40	60	100	PC
	Human Resource Management in Hospitals	3	0	0	3	40	60	100	PC
	Supply Chain Management in Healthcare	3	0	0	3	40	60	100	PC
	Cultural Competence and Diversity in Healthcare	3	0	0	3	40	60	100	HS
	Survey of a teaching hospital	0	0	4	2	60	40	100	PC
	Survey of a corporate hospital	0	0	4	2	60	40	100	PC
	Survey of a primary care hospital	0	0	2	1	60	40	100	PC
	Communication skills	0	0	0	0	MC			
	Total	27	2	10	33	540	660	1200	

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Principal
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Course code	Course title	Hours/week			Credits	Maximum Marks			Category
		L	T	P/C		CA	FE	Total	
SEMESTER 2									
	Healthcare Information Systems, Technology and Digital Health Standards for Hospitals	3	1	0	4	60	40	100	ES
	Clinical Governance and Risk Management	3	1	0	4	60	40	100	PC
	Healthcare Ethics and Legal Issues	3	0	0	3	60	40	100	PC
	Research Methodology	3	0	0	3	60	40	100	PC
	General Epidemiology	3	0	0	3	60	40	100	HS
	Basics of Accounting	3	0	0	3	60	40	100	BS
	Basics of Biostatistics, Quality tools and statistics software	3	2	0	4	60	40	100	PC
	Overview of Accreditation Standards and Processes	3	0	0	3	60	40	100	PC
	ISO 9000 family – Quality Management	3	0	0	3	60	40	100	EEC
	Audit of Information Systems Management	0	0	4	2	40	60	100	PC
	Open Elective 1	0	0	4	2	40	60	100	OE
	Total	27	4	8	34	620	480	1100	

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Course code	Course title	Hours/week			Credits	Maximum Marks			Category
		L	T	P/C		CA	FE	Total	
SEMESTER 3									
	Planning and Management of Patient Care and Support Services	3	0	0	3	60	40	100	PC
	Equipment & Material Management	3	0	0	3	60	40	100	PC
	Infection Control and Prevention	3	0	0	3	60	40	100	PC
	NABH - Entry Level Certification Programme	3	1	0	4	60	40	100	PC
	ISO 15189 "Medical laboratories-requirements for quality and competence"	4	1	0	4	60	40	100	PC
	Professional Elective 1	3	1	0	4	60	40	100	PE
	Professional Elective 2	3	1	0	4	60	40	100	PE
	Special Elective (MC)	1/3	0	0	1/3	40	60	100	MC
	Performing an internal audit of a diagnostic laboratory	0	0	4	2	40	60	100	PC
	Performing an internal audit of the hospital as per entry-level standards	0	0	4	2	40	60	100	EEC
	Performing an internal audit of a division in Radiology / Blood Bank	0	0	4	2	40	60	100	PC

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	Total	23/25	4	16	32/34	580	520	1100	

Course code	Course title	Hours/week			Credits	Maximum Marks			Category
		L	T	P/C		CA	FE	Total	
SEMESTER 4									
	ISO 7101 – Management standard for quality in Healthcare organizations – an outline	3	0	0	3	60	40	100	PC
	5th Edition of NABH Hospital Standards	8	2	0	9	60	40	100	PC
	Overview of safety and standards on X-ray equipment for radiography, radioscopy and CT, MRI	3	1	0	4	60	40	100	PC
	Overview of safety and standards in Nuclear Medicine	3	0	0	3	60	40	100	PC
	Continuous Quality Improvement (CQI) Methods and Tools	3	1	0	4	60	40	100	PC
	Performance Measurement and Benchmarking	3	1	0	4	60	40	100	PC
	Emergency Preparedness and Disaster Management in Hospitals	3	0	0	3	60	40	100	PC
	Healthcare Marketing and Public Relations	3	0	0	3	60	40	100	PC

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	Environmental Sustainability in Healthcare Facilities	3	0	0	3	60	40	100	PC
	Performing an internal audit of any 5 departments of the hospital as per the 5th Edition of NABH Hospital Standards	0	0	6	3	80	120	200	EEC
	Total	32	5	6	39	620	480	1100	

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List of Professional Electives:

NABH – Blood Centre Accreditation

NABH – Medical Imaging Services Accreditation

Emerging trends & innovations in Hospital Management

Teamwork

Patient-cantered care and patient experience

Ayushman Bharat and other Healthcare Insurance

Medical Tourism

Telemedicine

List of Special Electives:

Yoga, Cognition and Well-being

Contemplations from Yoga and Vedanta

Self-Awareness

Universal Human Values II

List of Open Electives:

Lifestyle Modification and Health

Basics of Yoga & Naturopathy

Clinical Research

Bioethics

Pharmacy for beginners

Basics of Psychology

Revenue cycle management

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3.3 Distinctiveness of the Programme

- Provides a comprehensive understanding of hospital administration and management, covering various aspects such as healthcare policies, organizational structure, financial management, human resources and quality improvement strategies.
- Incorporates accreditation standards into the curriculum, enabling students to understand the requirements and criteria set forth by accrediting bodies such as NABH, NABL, JCI and others.
- Offers training in conducting internal audits, equipping students with practical skills to assess compliance with accreditation standards, identify areas for improvement and implement corrective actions proactively.
- Emphasizes the importance of quality assurance in healthcare settings, teaching students to maintain and enhance hospital quality standards to improve patient care and safety.
- Highlights risk management principles and practices as a key aspect of the programme.
- Provides a real-world application through an interdisciplinary approach.
- Promotes a culture of continuous improvement within hospital settings.
- Enriches the programme by inviting guest speakers and industry experts to share insights and experiences, offering students valuable perspectives on current trends, challenges and best practices in hospital administration and management.
- Integrates theoretical knowledge, practical skills and industry insights to prepare students to excel in hospital administration, adhere to accreditation standards and drive continuous improvement within healthcare organisations.

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4 MSc in Women's Health, Hygiene & Psychology

4.1 Basic information

Who is eligible for this course?	Any UG Degree holder (Women Candidates only) with an aggregate of 50% or above
Number of seats per year	40
What will be the placement opportunity if they exit after one year?	They may be employed as Researchers in Women's' Health Issues, Women's Health Educators, etc.
What will be the placement opportunity after they complete the course?	They may be employed as Health Psychologist, Public Health Specialist, Women's Health Advocate, Women's Well-Being Counsellor etc.

4.2 Course scheme:

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Course code	Course title	Hours/week			Credit	Maximum Marks			Category
		L	T	P/C		CA	FE	Total	
SEMESTER 1									
	Basic Health Sciences	3	2	0	4	40	60	100	BS
	Anatomy of the female reproductive system	3	0	0	3	40	60	100	BS
	Physiological development of women and its impact on health across the life course	3	0	0	3	40	60	100	BS
	Physiology of pregnancy and lactation	3	0	0	3	40	60	100	BS
	Gender and health	3	0	0	3	40	60	100	PC
	Adolescent health	3	0	0	3	40	60	100	PC
	Basics of Yoga	3	0	0	3	40	60	100	PC
	Nutrition and health	3	0	0	3	40	60	100	PC
	Basics of Mental Health - 1	3	0	0	3	40	60	100	PC
	Preparing a diet plan for a schoolgirl and adolescent girl as per social customs	0	0	4	2	60	40	100	PC
	Asanas and Pranayama – Level 1	0	0	4	2	60	40	100	PC
	Physical fitness – Cardiac and weight training – level 1	0	0	2	1	60	40	100	EEC

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	Communication skills	0	0	0	0	MC			
	Total	27	2	10	33	540	660	1200	

Course code	Course title	Hours/week			Credit	Maximum Marks			Category
		L	T	P/C		CA	FE	Total	
SEMESTER 2									
	Pregnancy complications	3	0	0	3	60	40	100	PC
	Family planning methods /abortions and MTP-Social and legal aspects	3	0	0	3	60	40	100	PC
	Reproductive issues and hygiene	3	1	0	4	60	40	100	PC
	Social and cultural determinants of women's health	3	0	0	3	60	40	100	PC
	Women's health - Public health perspective	3	1	0	4	60	40	100	PC
	National programs for women in India and SDGs	3	0	0	3	60	40	100	PC
	Basics of Mental Health – 2 including eating disorders, postpartum depression and psychosis	3	1	0	4	60	40	100	PC
	Substance abuse	3	0	0	3	60	40	100	PC
	Professional Elective 1	3	1	0	4	60	40	100	PE
	Physical fitness – Cardiac and weight training – level 2	3	0	0	3	40	60	100	EEC
	Asanas and Pranayama – Level 2	0	0	4	2	40	60	100	PC

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	Preparing a diet plan for a pregnant/lactating mother as per social customs	0	0	4	2	40	60	100	PC
	Total	30	4	8	38	600	500	1100	

Course code	Course title	Hours/ week			Credit	Maximum Marks			Category
		L	T	P/C		CA	FE	Total	
SEMESTER 3									
	NCD: Endocrine and metabolic diseases in women, cardiovascular disease risks in women	3	0	0	3	60	40	100	PC
	NCD: Preventive oncology	3	0	0	3	60	40	100	PC
	Urogynaecological issues, including menopause	3	0	0	3	60	40	100	PC
	Mental health and women	3	1	0	4	60	40	100	PC
	Child rearing practices	4	1	0	4	60	40	100	PC
	Special Elective (MC)	3/1	0	0	3/1	60	40	100	SE
	Nurturing Emotional Intelligence and leadership, Time management	3	1	0	4	60	40	100	EEC
	Physiotherapy assessment and care of women with pelvic floor disorders, joint disorders and abdominal wall disorders	0	0	4	2	40	60	100	PC
	Meditation techniques, including Yoga Nidra	0	0	4	2	40	60	100	PC
	Resistance training techniques	0	0	4	2	40	60	100	EEC
	Open Elective 1	0	0	4	2	40	60	100	PC

	Total	20/22	4	16	33	580	520	1100	
Course code	Course title	Hours / week			Credit	Maximum Marks			Category
		L	T	P/C		CA	FE	Total	
SEMESTER 4									
	Legal rights and helpline for women	3	0	0	3	60	40	100	HS
	Financial literacy for women and available schemes	8	2	0	9	60	40	100	PC
	Workplace safety including sexual harassment	3	1	0	4	60	40	100	PC
	Counselling skills	3	0	0	3	60	40	100	PC
	Transgender –Health and other issues	3	1	0	4	60	40	100	HS
	Entrepreneurship and Self help groups – Overview	3	1	0	4	60	40	100	HS
	Basics of Research methods and ethics	3	0	0	3	60	40	100	PC
	Professional Elective 2	3	0	0	3	60	40	100	PC
	Physical wellness, including care of skin, hair and cosmetology	3	0	0	3	60	40	100	PC
	Woman Help Project	**0**	**0**	**6**	**3**	**80**	**120**	**200**	**EEC**
	Total	32	5	6	39	620	480	1100	

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List of Professional Electives:

Inheritance of wealth

Adoption – legal and psychological aspects

Marriage and Divorce- legal aspects

Caring for the unborn child

Care of the newborn

Maintaining work life balance

Ayushman Bharat and other Healthcare Insurance

Breaking the glass ceiling – a sociologist's perspective

List of Special Electives:

Yoga, Cognition and Well-being

Contemplations from Yoga and Vedanta

Self-Awareness

Universal Human Values II

List of Open Electives:

Lifestyle Modification and Health

Clinical Research

Bioethics

Pharmacy for beginners

Stress Management

Ethical, Cultural & Constitutional Values

Indian Knowledge Systems

Financial literacy

Self-defence

Entrepreneurship

Social Media Skills

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4.3 Distinctiveness of the Programme

- Equips students with comprehensive insights into women's health and psychology through interactive learning methods.
- Engages experts from diverse fields within PSG Institutions to enrich students' perspectives on women's health and well-being.
- Integrates practical skill development sessions to empower women in managing their health and addressing mental health concerns.
- Prioritizes cultural sensitivity and inclusivity in program materials and discussions to address the diverse needs of women.
- Fosters a supportive community environment through networking opportunities and peer support groups.
- Provides ongoing learning and support beyond the programme duration through alumni networks and updated resources.
- Empower students to advocate for women's health and rights in their communities and workplaces.
- Addresses the gap in training for roles like 'Women Welfare Officer' as identified by the National Career Service of the Ministry of Labour, Government of India.

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5 MSc Artificial Intelligence in Healthcare

5.1 Basic information

Who is eligible for this course?	Any UG Degree Holder with an aggregate of 50% or above
Number of seats per year	40
What will be the placement opportunity if they exit after one year?	They may be employed as AI Healthcare Specialists Health Data Analysts, AI Application Developer in Healthcare, Clinical Informatics Specialist etc
What will be the placement opportunity after they complete the course?	They may be employed as Clinical Analyst, Research Associate in AI, Healthcare Technology Consultants etc

5.2 Course scheme:

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Semester I

Course Code	Course Title	Hours / Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
1	Program Core – I Artificial Intelligence in Medicine, Basics of clinical data, biomarkers, precision medicine	3	2	0	4	40	60	100	PC
2	Program Core – II Design of Biomedical Devices and Systems	3	0	0	3	40	60	100	BS
3	Program Elective I Linear model and Regression / Numerical Methods / Statistical Forecast Evaluation / Applied Optimization / Mathematical Modelling and Simulation	3	0	0	3	40	60	100	BS
4	Program Elective II Computer Vision / Introduction to Digital Signal Processing / Machine Learning / HPC and Cloud Computing / Generative AI	3	0	0	3	40	60	100	PE
5	Research Methodology and IPR Ethical legal and social issues in AI	2	0	0	2	40	60	100	HS
6	Applied Biostatistics with practical	0	0	2	2	60	40	100	PC
7	Diagnostics & Devices Laboratory	0	0	2	2	60	40	100	PC
Total		14	2	4	19	320	380	700	

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Semester II

Course Code	Course Title	Hours / Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
1	Program Core – III Deep Learning	3	2	0	4	40	60	100	PC
2	Program Core – IV Clinical Implementations of AI including risk stratification, prediction analytics, modelling	3	0	0	3	40	60	100	PC
3	Program Elective III Bioinformatics / Clinical Decision Support / AI for Medical Time Series Data / Medical Statistics / Biomechanics / Medical Compliance of AI	3	2	0	3	40	60	100	PE
4	Program Elective IV Medical Robotics / Rehabilitation Technology / Computer-Assisted Surgery / Microsystems Engineering / Bio-signal Processing	3	0	0	3	40	60	100	PE
5	Entrepreneurship – Device Manufacturer / Hospital	2	0	0	2	40	60	100	HS
6	Bio-techniques and Bio-instrumentation Laboratory	0	0	2	2	60	40	100	PC
7	Medical Image Analysis Laboratory	0	0	2	2	60	40	100	PC
Total		14	02	04	19	320	380	700	

Semester III

Course Code	Course Title	Hours / Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
1	Program Elective V Cardiovascular Technology / Neuro Technology, Ophthalmic Technologies / Intelligent Implants and Surgical Instruments / Genetic Engineering / Bio-Nanotechnology	3	0	0	3	40	60	100	PE
2	Open Elective – 1. Programming of Microcontrollers 2. Computer Graphics and Geometry Processing 3. Digital Sustainability 4. Internet of Things 5. Ethical and Legal Issues 6. Biosensors and Interfacing	3	0	0	3	40	60	100	OE
3	Special Electives- 1. Yoga, Cognition and Well-being 2. Contemplations from Yoga and Vedanta 3. Self-Awareness 4. Universal Human Values II	3/1	0	0	3/1	40	60	100	SE
4	Dissertation – I / Industrial Project	0	0	20	10	60	40	100	EEC
Total		9/7	0	20	19/17	200	220	400	

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Semester IV

Course Code	Course Title	Hours / Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
1	Dissertation – I / Industrial Project	0	0	32	14	60	40	100	EEC
Total		0	0	32	14	60	40	100	

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5.3 *Distinctiveness of the Programme*

- The healthcare industry rapidly adopts innovative models like virtual, remote, and alternate care, driven by AI, data analytics, IoT, and other emerging technologies, transforming healthcare solutions and systems.
- Companies are rapidly implementing remote patient treatment, symptom-checking bots, and new remote consultation and tracking solutions to meet evolving patient needs. To train professionals in the biomedical industry and maintain a steady stream of innovation in dependable and affordable healthcare goods, while the number of diseases is developing at an accelerated rate, there is an urgent need to create specialisation in the healthcare system.
- The field of health informatics requires a wide range of experts to support, implement, evaluate, instruct, and conduct research on AI healthcare solutions. The Masters of Artificial Intelligence in Healthcare programme will teach the fundamentals and advanced concepts of AI and demonstrate how to use it in the medical field. Since the field is new, there are many rewarding opportunities.

Pursuing a Master's Degree in Artificial Intelligence in Healthcare can offer several significant benefits and opportunities:

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Specialised Knowledge:

The program helps to provide specialisation in innovative fields for resolving persistent issues with healthcare technologies to students from engineering, science, and related fields. It helps the learner develop expertise in artificial intelligence, data science, image processing, natural language processing, bio-informatics, development of medical devices, medical implants, and biomedical instrumentation. Due to the program's strong interdisciplinary focus, students develop expertise in multiple domains of engineering.

Innovation and Research Opportunities:

AI in healthcare has the potential to advance medical research, improve patient care, raise quality of life, and discover breakthrough treatment options. The program offers opportunities to explore research areas related to medical devices and instrumentation, medical imaging, biomechanics, biomaterials, rehabilitation engineering, and computational biomedical engineering, which are exciting and fast-moving fields with ever-changing boundaries.

Addressing Industry Challenges:

The program explores the intervention of AI technology, its applications, limitations, and industry opportunities. The main challenges in implementing AI technology in the medical field are ethical and moral issues, the necessity for a thorough evaluation of efficacy and cost-effectiveness, and the convergence of economic, patient safety, and regulatory demands. The master's programme can provide you with the knowledge and skills required to address these challenges effectively.

Personal Growth and Fulfilment:

Pursuing a master's degree is not just about acquiring technical expertise but also a journey of personal growth and fulfilment. It involves overcoming challenges, honing critical thinking skills, and developing a deeper understanding of the chosen field. Completing a master's program can instil confidence and provide a sense of achievement that can positively impact career and life trajectory.

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6 MSc - Data Analytics in Political Science and Society

6.1 Basic information

Who is eligible for this course?	Any UG Degree holder with an aggregate of 50% or above
Number of seats per year	40
What will be the placement opportunity if they exit after one year?	They may be employed as Political Analyst Assistant, Social Data Analyst etc.
What will be the placement opportunity after they complete the course?	They may be employed as Policy Researcher, Government Consultant, Data Scientist in Political Analysis etc.

6.2 Course scheme:

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Total Credits 98

Semester 1									
Course Code	Course Name	Hours/Week			Credits	Maximum Marks			
		L	T	P		CA	FE	Total	CAT
	Public Administration & Governance: Concepts and Theories	3	0	0	3	40	60	100	PC
	Contemporary Political Science: Theories and Models	3	0	0	3	40	60	100	PC
	Quantitative Techniques	3	0	0	3	40	60	100	PC
	Data and Society	3	0	0	3	40	60	100	PC
	Python for Data Analysis	3	0	0	3	40	60	100	PC
	Data Analytics and Politics	3	0	0	3	40	60	100	PC
	Special Elective (MC)	3/1	0	0	3/1	40	60	100	SE
	Data Analysis using Spreadsheets Lab	0	0	4	2	--	100	100	EEC
	Python Programming Lab	0	0	4	2	--	100	100	EEC
Total		21/19	0	8	26/24	280	720	1000	

Semester 2									
Course Code	Course Name	Hours/Week			Credits	Maximum Marks			
		L	T	P		CA	FE	Total	CAT
	Fund raising analytics and Campaign Finance	3	0	0	3	40	60	100	PC

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	Survey and Polling Methodology	3	0	0	3	40	60	100	PC
	Big data and Political Strategy	3	0	0	3	40	60	100	PC
	Political Communication	3	0	0	3	40	60	100	PC
	Sustainable Development Analytics	3	0	0	3	40	60	100	PC
	Machine Learning for Political Science	3	0	0	3	40	60	100	PC
	Social media	0	0	4	2	--	100	100	EEC
	Machine Learning Lab using any open-source software	0	0	4	2	--	100	100	EEC
Total		18	0	8	22	240	560	800	
Semester 3									
	Internship	0	8	4	4	--	100	100	EEC
	Leadership in Politics	3	0	0	3	40	60	100	PC
	Computational Text Analytics	3	0	0	3	40	60	100	PC
	Social Network Analytics	3	0	0	3	40	60	100	PC
	Political Behaviour Analytics	3	0	0	3	40	60	100	PC
	Qualitative Analysis in Political Science	3	0	0	3	40	60	100	PC
	Electoral Data and Predictive Modelling	3	0	0	3	40	60	100	PC
	Data Visualization for Political Data Lab	--	--	4	2	--	100	100	EEC
	Computational Linguistics Lab	--	--	4	2	--	100	100	EEC

Total	18	8	12	26	240	660	900	

Semester 4									
Course Code	Course Name	Hours/Week			Credits	Maximum Marks			
		L	T	P		CA	FE	Total	CAT
	Geographical Information Systems for Political Analysis	0	0	4	8	--	100	100	PC
	Data driven approaches for Campaign and Advocacy	3	0	0	3	40	60	100	PC
	Social Impact Assessment and Evaluation	3	0	0	3	40	60	100	PC
	Ethics of Data and Artificial Intelligence	3	0	0	3	40	60	100	PC
	Project	0	0	18	9	100	100	200	EEC
Total		9	0	22	26	220	380	600	

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Special Elective
Yoga, Cognition and Well-being
Contemplations from Yoga and Vedanta
Self-Awareness
Universal Human Values II

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6.3 Distinctiveness of the Programme

- The program emphasises data analytics techniques in political science and societal studies. Students will delve into political behaviour analysis, public opinion polling, policy analysis, and social network analysis, focusing on political and social phenomena.
- The program adopts an interdisciplinary approach, drawing various domains such as sociology, economics, psychology, and computer science. This interdisciplinary approach allows students to gain a broader understanding of the complex interactions between data, politics, and society.
- The program likely includes case studies and practical applications focused on political and societal issues. This could involve analysing election data, studying the effects of policy changes, or understanding social dynamics within specific populations
- The program can help optimise the implementation of social welfare programs such as the National Rural Employment Guarantee Act (NREGA), the Pradhan Mantri Jan Dhan Yojana (PMJDY), and the Pradhan Mantri Ujjwal Yojana (PMUY) by identifying target beneficiaries, detecting fraud and corruption, and monitoring program outcomes.
- The Indian government has initiatives like Digital India and Smart Cities Mission to leverage technology and data for governance and urban development. The program can help manage urban infrastructure, optimise resource allocation, and improve service delivery.
- The program includes a rigorous eight-week internship in the industry at the end of the first year and a capstone project during the second year. These opportunities allow students to apply their skills to real-world political and societal challenges. This practical experience is tailored to the specific domain of political science and society.
- Analysing political and social data raises unique ethical considerations, such as privacy concerns, data bias, and the potential to misuse insights. This program explicitly provides inputs to address these ethical issues, ensuring that students can navigate them responsibly.
- Graduates of this program may pursue careers in political consulting, public policy analysis, social research organisations, advocacy groups, and governmental agencies. They are equipped to analyse complex political and social phenomena and provide data-driven insights to various stakeholders.

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7 MA - Vocational Education and Human Resource Development

7.1 Basic information

Who is eligible for this course?	Any UG Degree holder with an aggregate of 50% or above
Number of seats per year	40
What will be the placement opportunity if they exit after one year?	They may be employed as HR Assistants, Training Coordinator, etc.
What will be the placement opportunity after they complete the course?	They may be employed as Vocational Education Instructors, Curriculum Developers, HR Development Specialists, Training Coordinators, Program Managers in Vocational Education, etc.

7.2 Course scheme:

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Semester 1									
Course Code	Course Name	Hours/ Week			Credits	Maximum Marks			
		L	T	P		CA	FE	Total	CAT
	Basics of Vocational and Adult Education	4	0	0	4	40	60	100	PC
	Nuances of Professional Teaching	4	0	0	4	40	60	100	PC
	Foundations of Human Resource Development	4	0	0	4	40	60	100	PC
	Basics of Analytics	4	0	0	4	40	60	100	PC
	Advanced Seminar: Vocational Education and Training Research	0	0	8	4	100	0	100	EEC
	Special Elective (MC)	3/1	0	0	3/1	40	60	100	SE
Total		19/17	0	8	23/21	300	300	600	
Semester 2									
Course Code	Course Name	Hours/Week			Credits	Maximum Marks			
		L	T	P		CA	FE	Total	CAT
	Digital Technology in Vocational Education and Training	4	0	0	4	40	60	100	PC
	Educational Psychology	4	0	0	4	40	60	100	PC
	Diagnostics and Evaluation in Vocational Education	4	0	0	4	40	60	100	PC
	Introduction to R Programming	4	0	0	4	40	60	100	PC
	Elective - Specialization I	4	0	0	4	40	60	100	PE
	Advanced Seminar: Vocational Education and Training Research	0	0	8	4	100	0	100	EEC
	R Programming Lab	0	0	4	2	100	0	100	EEC
	Total	20	0	12	26	400	300	700	

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Semester 3									
Course Code	Course Name	Hours/Week			Credits	Maximum Marks			
		L	T	P		CA	FE	Total	CAT
	Internship*	0	0	8	4	100	0	100	EEC
	Management Processes in Education	4	0	0	4	40	60	100	PC
	Elective 2 - Specialization I	4	0	0	4	40	60	100	PE
	Elective 3 - Specialization II	4	0	0	4	40	60	100	PE
	Elective 4 - Specialization II	4	0	0	4	40	60	100	PE
	Advanced Seminar: Instructional Design	0	0	8	4	100	0	100	EEC
	Total	16	0	16	24	360	240	600	

*Internship will be undertaken at the end of the second semester; Evaluations will be done at the start of the Third Semester

Semester 4									
Course Code	Course Name	Hours/Week			Credits	Maximum Marks			
		L	T	P		CA	FE	Total	CAT
	Master Thesis: Vocational Education and Human Resource Development	0	0	44	22	100	100	200	EEC
	Total	0	0	44	22	100	100	200	

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List of Electives

Specialization: Human Resource Development	
Course Name	Type
Strategic Career Designing	PE
Managing Diversity and Inclusion	PE
Perspectives in Organization Theory	PE
Special Electives	
Yoga, Cognition and Well-being	SE
Contemplations from Yoga and Vedanta	SE
Self-Awareness	SE
Universal Human Values II	SE

Specialization: Diagnostics and Research Method			
Course No	Course Name	Type	Credits
	Development of Tests and Instruments	PE	3
	Project Seminar in VET	PE	3
	Big Data and Learning Analytics	PE	3

7.3 Distinctiveness of the Programme

- Cultivates vocational education and human resource development expertise, providing graduates with a comprehensive understanding of theories, methods and practices in both fields.
- Empowers students to design engaging and effective learning experiences, integrating adult learning theory, instructional technology and outcome assessment techniques.
- Equips students to master the art of developing employees while understanding legal and ethical considerations through exploration of various training methods like performance management, coaching and mentoring,
- Enhances students' ability to conduct rigorous research and evaluate training programs, ensuring alignment with organizational and learner needs to enhance program effectiveness.

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- Prepares students for leadership in vocational education and human resource development, equipping them with communication, collaboration and problem-solving skills necessary for success.
- Promotes a culture of continuous learning and professional development through workshops, seminars and industry conferences, enabling students to stay updated with emerging trends and best practices in the field.
- It offers exposure to international perspectives and practices through exchange programs, collaborative projects with international institutions, and guest lectures from experts worldwide, broadening students' understanding and outlook in vocational education and human resource development.

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8 MBA - Indian Knowledge Tradition in Business Administration

8.1 Basic information

Who is eligible for this course?	Any UG Degree holder with an aggregate of 50% or above
Number of seats per year	60
What will be the placement opportunity if they exit after one year?	They may be employed as Business Consultant Assistant, Entrepreneur etc.
What will be the placement opportunity after they complete the course?	They may be employed as Business Consultant, Entrepreneur, Management Analyst, Policy Advisor, Corporate Trainer in Indian Knowledge Traditions etc.

8.2 Course scheme:

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Semester 1									
Course Code	Course Name	Hours/ Week			Credits	Maximum Marks			CAT
		L	T	P		CA	FE	Total	
	Introduction to Indian Philosophy	4	0	0	4	40	60	100	PC
	History of Ancient India and management	4	0	0	4	40	60	100	PC
	Introduction to IKS 14 Vidyas, 64 Kalas	3	0	2	4	100	0	100	PC
	Ancient Indian Trade and Commerce	3	0	2	4	40	60	100	PC
	Management Principles from traditional Indian knowledge systems	3	0	2	4	40	60	100	PC
	Special Elective (MC)	3/1	0	0	3/1	40	60	100	SE
	Total	20/18	0	6	23/21	300	300	600	

Semester 2									
Course Code	Course Name	Hours/Week			Credits	Maximum Marks			CAT
		L	T	P		CA	FE	Total	
	Interdisciplinary Approaches in Indian Knowledge Systems	4	0	0	4	40	60	100	PC
	Environmental Wisdom in Indian Traditions	4	0	0	4	40	60	100	PC
	Indian Contributions to Economics and Business	4	0	0	4	40	60	100	PC
	Social and Political Philosophy in India	3	0	2	4	40	60	100	PC

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	Marketing for emerging economies	3	0	2	4	40	60	100	PC
	Internship		0	8	4	40	60	100	PC
	Total	18	0	12	24	240	360	600	
Semester 3									
Course Code	Course Name	Hours/Week			Credits	Maximum Marks			CAT
		L	T	P		CA	FE	Total	
	Indian Ethos and values	4	0	0	4	40	60	100	PC
	Legal Systems in India	4	0	0	4	40	60	100	PC
	Indian Business Environment and Economics	4	0	0	4	40	60	100	PC
	Indian Financial Management	4	0	0	4	40	60	100	PC
	People Management in India	4	0	0	4	40	60	100	PC
	Data Management Systems	3	0	2	4	100	0	100	PC
	Total	23	0	2	24	300	300	600	
Semester 4									
Course Code	Course Name	Hours/Week			Credits	Maximum Marks			CAT
		L	T	P		CA	FE	Total	
	Research Methodology in Indian Knowledge Systems	4	0	0	4	40	60	100	PC
	Indian Business Models	4	0	0	4	40	60	100	PC
	Strategic Management in India	4	0	0	4	40	60	100	PC

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	Seminar on Current Developments in Indian Knowledge Systems	3	0	0	3	100	0	100	EEC
	Final Research Project	0	0	18	9	40	60	100	EEC
	Total	15	0	18	24	260	240	500	

Special Electives	Credits
Yoga, Cognition and Well-being	1
Contemplations from Yoga and Vedanta	1
Self-Awareness	3
Universal Human Values II	3

8.3 Distinctiveness of the Programme

- Integrates ancient wisdom, philosophies and practices into contemporary business systems and practices.
- Provides opportunities to network with other programs within the management framework of the institution.
- Addresses the gap in training by focusing on understanding traditional knowledge systems and their application in modern businesses.
- Encompasses a holistic approach, innovation, ethical framework, leadership and environmental sustainability.
- Delivers courses taught by trained professionals, experts in Indian knowledge traditions and industry practitioners.
- Leverages MOUs to enhance interdisciplinary collaboration and program delivery.
- Blends traditional wisdom with modern business practices for comprehensive understanding and synchronization.
- Offers foundational business courses in operations, finance, data management, economics and people management.
- Includes research methodology for students to synchronize traditional knowledge into contemporary practice.
- Design internship and a major project to offer experiential and on-field exposure, enhancing student employment opportunities.

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9 ME Microelectronics and Semiconductor Technology

9.1 Basic information

Who is eligible for this course?	BE (EEE, ECE, ICE) holder with an aggregate of 50% or above
Number of seats per year	18
What will be the placement opportunity if they exit after one year?	They may be employed as Development Engineer Assistant, Process Engineer Assistant etc.
What will be the placement opportunity after they complete the course?	They may be employed as Semiconductor Engineer, Microelectronics Research Scientist, Process Integration Manager, Semiconductor Process Engineer, Product Development Engineer in Semiconductor Industries, Quality Assurance Engineer for Semiconductor Industries

9.2 Course scheme:

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Course Code	Course Title	Hours/ Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
Semester I									
	Micro and Nano Fabrication Technology	3	0	0	3	40	60	100	PC
	Transistor Technology and Circuit Design	3	0	0	3	40	60	100	PC
	Magnetic Materials Technology	3	0	0	3	40	60	100	PC
	Semiconductor Device Physics: Basic Devices	3	0	0	3	40	60	100	PC
	Material Design Principles for Electronic, Electromechanical and Optical Functions	3	1	0	4	40	60	100	PC
	Semiconductor Materials, Synthesis and Characterization	3	0	0	3	40	60	100	PC
	Modelling, Design and Simulation for Materials Lab	0	0	4	2	60	40	100	PC
	Semiconductor Materials, Synthesis and Characterization Lab	0	0	4	2	60	40	100	PC
Total		19	1	8	23	360	440	800	
Semester II									
	Applied Quantum Computing Devices	3	0	0	3	40	60	100	PC
	High Speed Semiconductor Devices	3	0	0	3	40	60	100	PC
	Semiconductor Optoelectronics and Photovoltaics	3	0	0	3	40	60	100	PC
	Sustainable Semiconductor Manufacturing Processes	3	0	0	3	40	60	100	PC
	Semiconductor Applications in Mobile Devices	3	0	0	3	40	60	100	PC
	Special Elective (MC)	3/1	0	0	3/1	40	60	100	SE

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	Professional Elective I	3	0	0	3	40	60	100	PE
	Digital Fabrication Lab	0	0	4	2	60	40	100	PC
	Semiconductor Manufacturing Techniques and Process Optimization Lab	0	0	4	2	60	40	100	PC
Total		21/23	0	8	25/23	400	500	900	

Course Code	Course Title	Hours/ Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
Semester III									
	Photonics Technology: Materials & Devices	3	0	0	3	40	60	100	PC
	Semiconductor Devices for RF and Microwave Electronics	3	1	0	4	40	60	100	PC
	Professional Elective II	3	0	0	3	40	60	100	PE
	Professional Elective III	3	0	0	3	40	60	100	PE
	Open Elective	3	0	0	3	40	60	100	OE
	Project work I	0	0	12	6	60	40	100	EEC
	Technical Writing and Presentation	0	0	2	1	60	40	100	EEC
Total		15	1	14	23	320	380	700	
Semester IV									
	Project Work II	0	0	24	12	60	40	100	EEC

CA – Continuous Assessment; FE - Final Examination; CAT – Category; ES-Engineering Sciences; PC – Professional Core; PE - Professional Elective; OE-Open Elective; EEC – employability Enhancement Course; L – Lecture; T-Tutorial; P-Practical; Tot-Total; SE - Special Elective

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Professional Electives
Advanced Lithography
MEMS and Lab on a Chip
Wearable and Implantable Sensors
Physics and Manufacturing of Solar Cells
Flexible and Stretchable Electronics
Nanotechnology in Biology and Medicine
Solid State Devices
Analog Circuits and Embedded Systems for Sensors
Electronics Packaging and Photonic Devices
Radiation Effects and Reactor Materials
Statistical and Probabilistic Data analysis Techniques
Lasers: Principles and Systems
Advanced MEMS Packaging
Cybersecurity Fundamentals
Ethics in Science and Technology
Global Perspectives in Technology and Society
Entrepreneurship and Innovation in Technology
Nano electronics
VLSI Signal Processing
Special Electives
Yoga, Cognition and Well-being
Contemplations from Yoga and Vedanta
Self-Awareness
Universal Human Values II
Open Electives
Thermodynamics and Kinetics
Organic Electronics
Materials of Quantum Technologies
Microfluidics
Applied Solid State Physics
Structure and Characterization of Semiconductor Materials
Micro and Nano Fabrication

Semiconductor Device Physics: Basic Devices
Materials for Renewable Energy Technologies
Cleanroom Technology and Semiconductor Manufacturing Practices
Surface Science and Thin Film Technology
Analog and Digital Integrated Circuits

9.3 Distinctiveness of the Programme

- This programme, 'Microelectronics and Semiconductor Technology,' is designed with a visionary perspective, recognising India's potential to become a global hub for semiconductor and chip-making industries (Aatma Nirbhar). As India's electronic and semiconductor manufacturing sector experiences phenomenal growth, there is a pressing need for skilled professionals in the field. This program addresses this demand by equipping students with industry-relevant knowledge and practical skills.
- The program's thrust areas encompass cutting-edge semiconductor technologies, including microelectronics design, fabrication, and integration.
- This programme aims to cultivate professionals with specialised knowledge in the design, development and integration of micro and nanoelectronics devices coupled with semiconductor technologies to address the evolving demands of modern industries effectively.
- Through this programme, students will be equipped to navigate the evolving semiconductor industry, mastering cutting-edge industry standards and practical competencies.
- Students will be empowered to excel in the dynamic semiconductor and VLSI industry, positioning them as qualified professionals capable of undertaking challenging roles globally.
- Through MoUs with renowned semiconductor industries in India, this programme aims to integrate industry insights into the curriculum, offering students valuable interdisciplinary exposure and training opportunities.
- Internship opportunities for students will serve as pathways to secure placements in reputed semiconductor companies, providing students with practical experience and potential career opportunities in the Semiconductor & Microelectronics domain
- The program prepares students to pursue advanced studies in Microelectronics and Semiconductor Technologies, fostering contributions to technology innovation and advancement.
- Students' project evaluations will be done by a committee of industry and academic experts, ensuring the quality and relevance of student projects and promoting a culture of excellence and innovation.

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- This program also moulds students to lead diverse teams with integrity and effective communication, promoting lifelong learning and social responsibility.

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10 M.Tech. Industrial Textiles

10.1 Basic information

Who is eligible for this course?	B.Tech. (Textiles / Fashion Technology) Degree holder with an aggregate of 50% or more
Number of seats per year	18
What will be the placement opportunity if they exit after one year?	They may be employed as Production Managers in Textile Manufacturing, Quality Control Managers, Technical Sales Representatives for Textile Machinery and Products, etc.
What will be the placement opportunity after they complete the course?	They may be employed as Textile Research Scientist, Industry Manager etc.

10.2 Course scheme:

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Course Code	Course Title	Hours / Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
Semester 1									
	Statistical Analysis and Design of Experiments in Textile Engineering	3	2	0	4	40	60	100	BS
	Structure and Properties of Fibres	3	0	0	3	40	60	100	PC
	Characterization of Textile Polymers	3	0	0	3	40	60	100	PC
	Textile Reinforced Composites	3	0	0	3	40	60	100	PC
	Research Methodology and IPR	2	0	0	2	40	60	100	HS
	Statistical Analysis and Optimization Laboratory	0	0	2	2	60	40	100	PC
	Characterization of Fibers and Composites Laboratory	0	0	2	2	60	40	100	PC
Total		14	2	4	19	320	380	700	
Semester II									
	High-Performance Textiles	3	2	0	3	40	60	100	PC
	Processes and Machines of Textile Technology	3	0	0	3	40	60	100	PC
	Professional Elective I	3	0	0	3	40	60	100	PE
	Professional Elective II	3	0	0	3	40	60	100	PE
	Professional Elective III	3	0	0	3	40	60	100	PE
	Textile Quality Evaluation Laboratory	0	0	2	2	60	40	100	PC
2.7	Product Development Laboratory	0	0	2	2	60	40	100	PC
Total		15	02	04	19	320	380	700	

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Principal
PSGCAS/PSG

Course Code	Course Title	Hours / Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
	Semester III								
	Professional Elective IV	3	0	0	3	40	60	100	PE
	Professional Elective V	3	0	0	3	40	60	100	PE
	Dissertation – I / Industrial Project – Phase 1	0	0	20	10	60	40	100	EEC
	Special Elective (MC)	1/3	0	0	1/3	40	60	100	SE
Total		7/9	00	20	17/19	140	160	300	

Course Code	Course Title	Hours / Week			Credits	Maximum marks			CAT
		L	T	P		CA	FE	Tot	
	Semester IV								
1	Dissertation – I / Industrial Project – Phase 2	0	0	32	14	60	40	100	EEC
Total		00	00	32	14	60	40	100	

CA – Continuous Assessment; FE - Final Examination; CAT – Category; BS – Basic Sciences; HS - Humanities & Social Sciences; ES - Engineering Sciences; PC – Professional Core; EEC - Employability Enhancement Course; PE - Professional Elective; OE - Open Elective; L – Lecture; T-Tutorial; P-Practical; Tot-Total: SE - Special Elective

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LIST OF ELECTIVES

S. No.	Elective Courses
Professional Elective I	
	Structure and Properties of Nonwovens
	Coated and Laminated Textiles
	Ballistic Protective Textiles
	Extreme cold and heat protective clothing
	Medical Textiles
Professional Elective II	
	Sustainability in Textile Industry
	Textiles in Civil Construction and Transportation
	Textile Physics and Chemistry
	Product Development
	Advanced Textile Structures
Professional Elective III	
	Textile and Wearable Electronics
	Textile based Composite Technology and Additive Manufacturing
	Processes and Machines of Textile Technology
	Renewable Products for the Textile Industry
	Filtration Textiles
Professional Elective IV	
	Enzyme Technology for Textile Processing
	Structural Mechanics of Fabrics
	Theory of Twisting
	Pollution Abatement in Textile Industry
	Design and Analysis of Textile Experiments
	Surface Modification of Textiles

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10.3 Distinctiveness of the Programme

- Focuses on specialized knowledge and skills in industrial textiles, covering various aspects such as manufacturing processes, materials and applications.
- Adopts an interdisciplinary approach, integrating principles from textile engineering, material science, mechanical engineering, and industrial engineering to comprehensively understand industrial textiles.
- Prepares students for hands-on training in industrial textile production processes, machinery operation, quality control, and testing methods, preparing them for practical challenges in the industry.
- Includes advanced courses in textile chemistry, textile processing, composite materials, technical textiles and smart textiles, staying abreast of industry trends and innovations.
- Emphasizes research and development in industrial textiles, encouraging students to explore new materials, technologies and applications to enhance industrial processes and product performance.
- Collaborating with industry partners to facilitate guest lectures, industrial visits, internships and live projects, providing students with real-world exposure and networking opportunities.
- Integrates concepts of sustainability, eco-friendly materials and green manufacturing processes into the curriculum.
- Develops students' careers in various sectors, such as textile manufacturing, the automotive industry, the aerospace industry, medical textiles, protective clothing, and sports equipment manufacturing.

26 MAR 2024

Dr. T.M. Subba Rao, MD.,
PRINCIPAL
PSG Institute of Medical Sciences
& Research / PSG Hospitals
Coimbatore - 641 004.

Dr.T.M.SubbaRao M.D
Principal
PSGIMSR/PSG Hospitals