



FACULTY OF SCIENCE

COURSE STRUCTURE (2 YEARS PROGRAM)

MASTER OF SCIENCE (GEOINFORMATICS)

Aegis: Charutar Vidya Mandal (Estd.1945)

Effective from Academic Year: 2026-27



Faculty Name: Science

Programme Name: Master of Science (Geoinformatics)

Programme Structure Summary

SEMESTER 1											
Course Group	Course Name	Cr	Teaching Scheme				INT(T) Max./ Passing	EXT(T) Max./ Passing	INT(P) Max./ Passing	EXT(P) Max./ Passing	Grand Total Max./ Passing
			T	P	Tu	Cont. Hrs					
Discipline Specific Core (DSC)	Principles and Applications of Geographical Information System	4	4	0	0	4	50/20	50/20	NA	NA	100/40
Discipline Specific Core (DSC)	Concept and Applications of Global Navigation Satellite System	4	4	0	0	4	50/20	50/20	NA	NA	100/40
Discipline Specific Core (DSC)	Principles of Remote Sensing and Emerging Trends	4	4	0	0	4	50/20	50/20	NA	NA	100/40
*Discipline Specific Elective (DSE)	Python Programming for Geographical Information System	4	4	0	0	4	50/20	50/20	NA	NA	100/40
	Concepts of Photogrammetry										
Discipline Specific Core (DSC)	Python Programming Lab	3	0	6	0	6	NA	NA	25/10	50/20	75/30
Discipline Specific Core (DSC)	Geographical Information System Lab	3	0	6	0	6	NA	NA	25/10	50/20	75/30
*Skill Enhancement Course	Digital Productivity Tools and Enterprise Documentation Lab	2	0	4	0	4	NA	NA	25/10	25/10	50/20
	Relational Database Management System Lab										

*Any one Elective



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SEMESTER 2											
Course Group	Course Name	Cr	Teaching Scheme				INT(T) Max./ Passing	EXT(T) Max./ Passing	INT(P) Max./ Passing	EXT(P) Max./ Passing	Grand Total Max./ Passing
			T	P	Tu	Cont. Hrs					
Discipline Specific Core (DSC)	Digital Image Processing Techniques	4	4	0	0	4	50/20	50/20	NA	NA	100/40
Discipline Specific Core (DSC)	Spatial Analysis and Modelling for GIS	4	4	0	0	4	50/20	50/20	NA	NA	100/40
Discipline Specific Core (DSC)	Web Development and PHP Programming	4	4	0	0	4	50/20	50/20	NA	NA	100/40
*Discipline Specific Elective (DSE)	Application of Space Technology for Disaster Management	4	4	0	0	4	50/20	50/20	NA	NA	100/40
	Application of Space Technology for Natural Resource Management										
Discipline Specific Core (DSC)	Digital Image Processing Lab	3	0	6	0	6	NA	NA	25/10	50/20	75/30
Discipline Specific Core (DSC)	Web Programming Lab	3	0	6	0	6	NA	NA	25/10	50/20	75/30
*Skill Enhancement Course	Geo-AI Lab	2	0	4	0	4	NA	NA	25/10	25/10	50/20
	Simulation for Space Technology										

*Any one Elective



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SEMESTER 3											
Course Group	Course Name	Cr	Teaching Scheme				INT(T) Max./ Passing	EXT(T) Max./ Passing	INT(P) Max./ Passing	EXT(P) Max./ Passing	Grand Total Max./ Passing
			T	P	Tu	Cont. Hrs					
Discipline Specific Core (DSC)	Spatial Data Infrastructures	4	4	0	0	4	50/20	50/20	NA	NA	100/40
Discipline Specific Core (DSC)	FOSS GIS Technologies and Applications	4	4	0	0	4	50/20	50/20	NA	NA	100/40
Discipline Specific Core (DSC)	Advanced Remote Sensing in Planetary Science	4	4	0	0	4	50/20	50/20	NA	NA	100/40
*Discipline Specific Elective (DSE)	Web GIS and Mobile GIS Applications	4	4	0	0	4	50/20	50/20	NA	NA	100/40
	Geoinformatics Application in Utility Management										
Discipline Specific Core (DSC)	Web GIS and Mobile GIS Applications Lab	3	0	6	0	6	NA	NA	25/10	50/20	75/30
Discipline Specific Core (DSC)	FOSS GIS Lab	3	0	6	0	6	NA	NA	25/10	50/20	75/30
*Skill Enhancement Course	AI-ML Driven Digital Image Processing Lab	2	0	4	0	4	NA	NA	25/10	25/10	50/20
	Concept of Drone Technology										

*Any one Elective

SEMESTER 4											
Course Group	Course Name	Cr	Teaching Scheme				INT(T) Max./ Passing	EXT(T) Max./ Passing	INT(P) Max./ Passing	EXT(P) Max./ Passing	Grand Total Max./ Passing
			T	P	Tu	Cont. Hrs					
Core	Project Work	24	NA	NA	NA	48	NA	NA	300/120	300/120	600/240



Faculty Name: Science

Programme Name: Master of Science (Geoinformatics)

Programme Outcomes (PO)

PO-1	Geospatial Knowledge Students will be able to demonstrate a comprehensive understanding of fundamental and advanced concepts in Geoinformatics, including GIS, Remote Sensing, GPS, spatial databases, and geospatial data analysis.
PO -2	Technical and Analytical Skills Students will be able to apply modern geospatial tools, software, and analytical techniques to process, analyze, and interpret spatial data for solving real-world problems.
PO-3	Spatial Data Acquisition and Management Students will be able to collect, manage, and integrate spatial and non-spatial datasets using field techniques, GPS, satellite imagery, and spatial databases.
PO -4	Geospatial Problem Solving Students will be able to design geospatial solutions for environmental, urban, agricultural, and disaster management problems using GIS and remote sensing technologies.
PO-5	Cartographic and Visualization Skills Students will be able to prepare accurate maps and geospatial visualizations using modern cartographic principles, GIS tools, and digital mapping techniques.
PO-6	Research and Innovation Students will be able to conduct independent research, analyze spatial data scientifically, and develop innovative geospatial applications for academic and industrial purposes.
PO-7	Communication and Knowledge Sharing Students will be able to effectively communicate geospatial information and research findings through technical reports, maps, presentations, and publications.
PO-8	Teamwork and Collaboration Students will be able to work effectively in multidisciplinary teams, collaborating with professionals from diverse fields to implement geospatial projects.
PO-9	Critical Thinking and Decision Making Students will be able to critically evaluate spatial information, assess assumptions, and make informed decisions for planning and policy support.
PO-10	Lifelong Learning and Professional Ethics Students will demonstrate commitment to lifelong learning, professional ethics, and responsible use of geospatial technologies considering societal, environmental, and technological developments.



Faculty Name: Science

Programme Name: Master of Science (Geoinformatics)

Program Educational Objectives (PEO)

PEO-1	Professional Competence in Geospatial Technology Graduates will establish successful careers in geospatial industries, government organizations, research institutions, and academia by applying advanced knowledge and technical skills in GIS, Remote Sensing, and spatial data analysis.
PEO-2	Problem Solving and Innovation Graduates will apply geospatial technologies and analytical thinking to develop innovative solutions for environmental, agricultural, urban planning, and disaster management challenges.
PEO-3	Research, Collaboration, and Communication Graduates will demonstrate the ability to conduct research, communicate geospatial information effectively, and work collaboratively in multidisciplinary teams across academic, industrial, and societal sectors.
PEO-4	Lifelong Learning and Professional Ethics Graduates will pursue continuous professional development, higher education, and responsible use of geospatial technologies, contributing ethically to societal, environmental, and technological advancement.

Programme Specific Outcomes (PSO)

PSO-1	Geospatial Data Acquisition and Analysis Graduates will be able to apply fundamental and advanced concepts of GIS, GPS, Remote Sensing, and Photogrammetry to collect, process, analyze, and visualize spatial data for scientific and practical applications.
PSO-2	Geospatial Tools and Technologies Graduates will demonstrate practical skills in using contemporary geospatial tools and platforms, including QGIS, Mobile GIS applications, Spatial Data Infrastructure (SDI), and Web GIS services, for effective spatial data management and decision support.
PSO-3	Application of Geospatial Solutions Graduates will be able to design and implement geospatial solutions for real-world challenges in domains such as disaster management, governance, environmental monitoring, and utility services through project work, internships, and applied research.
PSO-4	Geospatial Programming and Database Management Graduates will demonstrate proficiency in programming and spatial database management relevant to geoinformatics, enabling them to develop custom GIS tools, automate spatial workflows, and build web-based geospatial applications.



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Semester: I Academic Batch: 2026-27

Course Group	Board of Studies / Faculty Ownership	Course Code	Course Name	Cr	Teaching Scheme				Assessment/ Evaluation Type		External Exam Duration (Hrs.)		INT(T) Max./ Passing	EXT(T) Max./ Passing	INT(P) Max./ Passing	EXT(P) Max./ Passing	Grand Total Max./ Passing
					T	P	Tu	Cont. Hrs	T	P	T	P					
Discipline Specific Core 01	Physical Science / Faculty of Science	2GISC01001	Principles and Applications of Geographical Information System	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
Discipline Specific Core 02	Physical Science / Faculty of Science	2GISC01002	Concept and Applications of Global Navigation Satellite System	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
Discipline Specific Core 03	Physical Science / Faculty of Science	2GISC01003	Principles of Remote Sensing and Emerging Trends	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
* Discipline Specific Elective	Physical Science / Faculty of Science	2GISE01001	Python Programming for Geographical Information System	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
	Physical Science / Faculty of Science	2GISE01002	Concepts of Photogrammetry	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
Discipline Specific Core Practical 01	Physical Science / Faculty of Science	2GISC01004	Python Programming Lab	3	0	6	0	6		P		3	NA	NA	50/20	50/20	100/40
Discipline Specific Core Practical 02	Physical Science / Faculty of Science	2GISC01005	Geographical Information System Lab	3	0	6	0	6		P		3	NA	NA	50/20	50/20	100/40
*Skill Enhancement Course	Physical Science / Faculty of Science	2GISS01001	Digital Productivity Tools and Enterprise Documentation Lab	2	0	4	0	4		P		2	NA	NA	25/10	25/10	50/20
	Physical Science / Faculty of Science	2GISS01002	Relational Database Management System Lab	2	0	4	0	4		P		2	NA	NA	25/10	25/10	50/20

T = Theory, P = Practical, Tu = Tutorial

Name & Sign
[Chairman - Board of Studies]: Dr. Mehul Dave

Name & Sign
[Dean / Director]: Dr. Mahendrasinh Raj



Faculty Name: Science

Programme Name: Master of Science (Geoinformatics)

Semester: II Academic Batch: 2026-27

Course Group	Board of Studies / Faculty Ownership	Course Code	Course Name	Cr	Teaching Scheme				Assessment/ Evaluation Type		External Exam Duration (Hrs.)		INT(T) Max./ Passing	EXT(T) Max./ Passing	INT(P) Max./ Passing	EXT(P) Max./ Passing	Grand Total Max./ Passing
					T	P	Tu	Cont. Hrs	T	P	T	P					
Discipline Specific Core 01	Physical Science / Faculty of Science	2GISC02001	Digital Image Processing Techniques	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
Discipline Specific Core 02	Physical Science / Faculty of Science	2GISC02002	Spatial Analysis and Modelling for GIS	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
Discipline Specific Core 03	Physical Science / Faculty of Science	2GISC02003	Web Development and PHP Programming	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
* Discipline Specific Elective	Physical Science / Faculty of Science	2GISE02001	Application of Space Technology for Disaster Management	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
	Physical Science / Faculty of Science	2GISE02002	Application of Space Technology for Natural Resource Management	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
Discipline Specific Core Practical 01	Physical Science / Faculty of Science	2GISC02004	Digital Image Processing Lab	3	0	6	0	6		P		3	NA	NA	50/20	50/20	100/40
Discipline Specific Core Practical e 02	Physical Science / Faculty of Science	2GISC02005	Web Programming Lab	3	0	6	0	6		P		3	NA	NA	50/20	50/20	100/40
*Skill Enhancement Course	Physical Science / Faculty of Science	2GISS02001	Geo-AI Lab	2	0	4	0	4		P		2	NA	NA	25/10	25/10	50/20
	Physical Science / Faculty of Science	2GISS02002	Simulation for Space Technology	2	0	4	0	4		P		2	NA	NA	25/10	25/10	50/20

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Dr. Mahendrasinh Raj



Faculty Name: Science

Programme Name: Master of Science (Geoinformatics)

Semester: III Academic Batch: 2026-27

Course Group	Board of Studies / Faculty Ownership	Course Code	Course Name	Cr	Teaching Scheme				Assessment/ Evaluation Type		External Exam Duration (Hrs.)		INT(T) Max./ Passing	EXT(T) Max./ Passing	INT(P) Max./ Passing	EXT(P) Max./ Passing	Grand Total Max./ Passing
					T	P	Tu	Cont. Hrs	T	P	T	P					
Discipline Specific Core 01	Physical Science / Faculty of Science	2GISC03001	Spatial Data Infrastructures	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
Discipline Specific Core 02	Physical Science / Faculty of Science	2GISC03002	FOSS GIS Technologies and Applications	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
Discipline Specific Core 03	Physical Science / Faculty of Science	2GISC03003	Advanced Remote Sensing in Planetary Science	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
* Discipline Specific Elective	Physical Science / Faculty of Science	2GISE03001	Web GIS and Mobile GIS Applications	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
	Physical Science / Faculty of Science	2GISE03002	Geoinformatics Application in Utility Management	4	4	0	0	4	T		2.5		50/20	50/20	NA	NA	100/40
Discipline Specific Core Practical 01	Physical Science / Faculty of Science	2GISC03004	Web GIS and Mobile GIS Applications Lab	3	0	6	0	6		P		3	NA	NA	50/20	50/20	100/40
Discipline Specific Core Practical e 02	Physical Science / Faculty of Science	2GISC03005	FOSS GIS Lab	3	0	6	0	6		P		3	NA	NA	50/20	50/20	100/40
*Skill Enhancement Course	Physical Science / Faculty of Science	2GISS03001	AI-ML Driven Digital Image Processing Lab	2	0	4	0	4		P		2	NA	NA	25/10	25/10	50/20
	Physical Science / Faculty of Science	2GISS03002	Concept of Drone Technology	2	0	4	0	4		P		2	NA	NA	25/10	25/10	50/20

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[Dean / Director]:

Dr. Mahendrasinh Raj



Faculty Name: Science
Programme Name: Master of Science (Geoinformatics)
Semester: IV Academic Batch: 2026-27

Course Group	Board of Studies / Faculty Ownership	Course Code	Course Name	Cr	Teaching Scheme				Assessment/ Evaluation Type		External Exam Duration (Hrs.)		INT(T) Max./ Passing	EXT(T) Max./ Passing	INT(P) Max./ Passing	EXT(P) Max./ Passing	Grand Total Max./ Passing
					T	P	Tu	Cont. Hrs	T	P	T	P					
Major 1	Physical Science / Faculty of Science	2GISC04001	Project Work	24	0	0	0	48		P		2			300/120	300/120	600/240

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Aegis: Charutar Vidya Mandal (Estd.1945)