



ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ
ವಿಟೆಯು ಅಧಿನಿಯಮ ೧೯೯೪ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯವಿಶ್ವವಿದ್ಯಾಲಯ
VISVESVARAYA TECHNOLOGICAL UNIVERSITY
State University of Government of Karnataka Established as per the VTU Act, 1994 "JnanaSangama" Belagavi-590018, Karnataka, India



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CIRCULAR

Subject: Update in Syllabus - MCV114D Remote Sensing & GIS regarding...
Reference: Chairperson Approval Dated: 10.11.2025

Sir/Madam,

This is to inform you that **Module 03**, which was previously missing, has now been added to the 1st Semester syllabus of the course "**MCV114D – Remote Sensing & GIS**" under the 2024 Scheme Postgraduate Civil Engineering Programme.

As the 1st Semester syllabus is common for all programmes under the Civil Engineering stream, this update shall be applicable to all Postgraduate Civil Engineering programmes.

The updated syllabus copy is attached to this circular for the information and reference of all stakeholders.

All Principals of Engineering Colleges affiliated to the University and Chairpersons/Programme Coordinators of University Departments are hereby informed to bring the contents of this circular to the notice of all concerned faculty and students.

Encl: MCV114D – Updated Syllabus

Rampure/10/11/25

REGISTRAR

To,

01. The principals of Non-Autonomous, Constituent Engineering Colleges under the ambit of the University.
02. The Chairpersons/Programme Coordinators of University Departments at Kalburgi, Belagavi, Bengaluru, and Mysuru

Copy to,

1. The Hon'ble Vice-Chancellor, through the Secretary to the VC, for information
2. The Dean Faculty of Engineering for information
3. The Registrar (Evaluation) for information and needful
4. The Chairperson, BoS in Civil Engineering, for information
5. The Director ITI SMU, VTU Belagavi for information and make arrangements for uploading of the Notification on the VTU web portal
6. The Special Officer, QPDS section VTU Belagavi, for information and needful
7. Office file

REMOTE SENSING & GEOGRAPHICAL INFORMATION SYSTEM			
Course Code	MCV114D	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	2:0:2	SEE Marks	50
Total Hours of Pedagogy	40 hours Theory + 10-12 Lab slots	Total Marks	100
Credits	03	Exam Hours	03
Course objectives: Students will be able to know <ul style="list-style-type: none">To understand basic concept & techniques of Remote Sensing and GIS.To acquire skills in image processing techniques and interpretation of remotely sensed data.To develop spatial database for its various application.To perform various spatial analysis related to water and land management.			
MODULE-1			
Module-1 1. Remote Sensing: Remote Sensing Basic Principles: Introduction, Electromagnetic Remote Sensing Process, Physics of Radiant Energy: Nature of Electromagnetic Radiation, Electromagnetic Spectrum; Energy Source and its Characteristics, Atmospheric Interactions with Electromagnetic Radiation: Atmospheric properties, Absorption of Ozone, Atmospheric effects on Spectral Response Patterns; Energy interactions with Earth's surface materials: Spectral Reflectance Curves; Cossine Law. Remote Sensing Platforms and Sensors: Satellite System Parameters, Sensor Parameter: Spatial Resolution, Spectral Resolution, Radiometric Resolution; Imaging Sensor Systems: Multispectral Imaging Sensor System, Thermal Sensing System, Microwave Imaging Systems; Earth Resources Satellites: Landsat Satellite Programme, SPOT Satellite, Indian Remote Sensing Satellite (IRS); Meteorological Satellites: NOAA Satellite, GOES Satellite.			
Teaching- Learning Process		Black-Board Teaching, Power Point Presentation, Assignments	
MODULE-2			
Visual Image Interpretation: Introduction Digital Image Processing: Introduction, Basic Character of Digital Image, Pre-processing: Geometric Correction Methods, Radiometric Geometric Correction, Atmospheric Geometric Correction; Image Enhancement Techniques: Contrast Enhancement; Spatial Filtering Techniques: Low Pass Filters, High Pass Filters, Filtering for Edge Enhancement; Image Transformations NDVI Transformation, PCA Transformation; Image Classification: Supervised Classification, Training Dataset, Unsupervised Classification.			
Teaching- Learning Process		Black-Board Teaching, Power Point Presentation, Skill enhancement through problem solving. image enhancement techniques using open source software.	
MODULE-3			
Geographical Information System: Introduction to GIS: Introduction to GIS History of GIS, Early developments in GIS, Applications of GIS, Spatial Data Input and Editing: Primary Data, Secondary Data, and Data Editing. Introduction: Maps and Map Scale, Map Scale, Type of Maps, Map and Glob. Geo-referencing and Projection: Understanding Earth, Coordinate System, Map Projection, Transformation, Geo-referencing.			
Teaching-Learning Process		Black-Board Teaching, Power Point Presentation, map making techniques using open sources GIS software.	
MODULE-4			

	<p>Spatial Database Management Systems: Introduction, Data Storage, Database Structure Models, Database Management system, Entity Relationship Model, Normalization.</p> <p>Data Models and Data Structures: Introduction, GIS Data Model, Vector Data Structure, Raster Data structure, Geodatabase and Metadata.</p> <p>Modelling Surfaces :DTM Generation, Triangulated Irregular Network (TIN), DTM Manipulation, DTM Interpretation. DTM Applications.</p>
<p>Teaching-Learning Process</p>	<p>Black-Board Teaching, Power Point Presentation, Performing spatial analysis techniques using open sources GIS software.</p>
<p>MODULE 5</p>	
	<p>Spatial Analysis: Introduction to spatial analysis, Vector Operations and Analysis, Network Analysis, Raster Data Spatial Analysis.</p> <p>Interpolation: Introduction to Interpolation, Global Methods of Interpolation, Local Methods of Interpolation.</p> <p>Web GIS: Introduction, Web GIS, OGC & Web Services.</p>
<p>Teaching-Learning Process</p>	<p>Black-Board Teaching, Power Point Presentation, Skill enhancement through problem solving. Understanding spatial analysis techniques using open sources GIS software.</p>
<p>Assessment Details (both CIE and SEE)</p> <p>The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p> <p>Continuous Internal Evaluation:</p> <ul style="list-style-type: none"> • Three Unit Tests each of 20 Marks • Two assignments each of 20 Marks or one Skill Development Activity of 40 marks • To attain the Cos and POs <p>The sum of three tests, two assignments/skill Development Activities, will be scaled down to 50 marks</p> <p>CIE methods/question paper is designed to attain the different levels of Bloom's taxonomy</p> <p>As per the outcome defined for the course. Semester End Examination:</p> <ul style="list-style-type: none"> • The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50. • The question paper will have ten full questions carrying equal marks. • Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module. • Each full question will have a sub-question covering all the topics under a module. <p>The students will have to answer five full questions, selecting one full question from each module</p>	
<p>Suggested Learning Resources:</p> <p>Text Books:</p> <p>M. Anji Reddy, -Remote Sensing and Geographical Information Systems' 4th Edition, BS Publications.</p> <p>Kang-Tsung Chang, -Introduction to Geographic Information Systems', McGraw-Hill Book Company.</p> <p>Reference Books:</p> <ol style="list-style-type: none"> 1. Longley, P. A., Goodchild, M. F., Maguire, D. J., and Rhind, D. W., -Geographic Information Systems and Science', 2nd Edition, John Wiley and Sons. 2. Burrough, P. A., and McDonnell, R. A. -Principles of Geographical Information Systems', Oxford University Press, 2nd Edition. <p>Demers, M. N., -Fundamentals of Geographic Information Systems', John Wiley & Sons, 3rd Edition.</p>	
<p>Web links and Video Lectures (e-Resources):</p> <ul style="list-style-type: none"> • Students are encouraged to visit SWAYAM web site where there are several Massive Open Online Courses (MOOC), http://swayam.gov.in 	