

G.I.S in Civil Engineering - Web course

COURSE DETAIL

Syllabus		
Module No.	Topic	No. of Hours
I	Introduction to GIS <ul style="list-style-type: none"> • Introduction to GIS • History of GIS • Early developments in GIS • Applications of GIS 	02
II	Map and Map Scales <ul style="list-style-type: none"> • Introduction to Maps • History of Maps • Map Scales • Types of Maps • Map and Globe 	02
III	Georeferencing and Projection <ul style="list-style-type: none"> • Understanding Earth • Coordinate System • Map Projection • Transformation • Georeferencing 	04
IV	Spatial Database Management Systems <ul style="list-style-type: none"> • Introduction • Data Storage • Database Structure Models • Database Management system • Entity Relationship Model • Normalization 	03
V		



NP-TEL

NPTEL

<http://nptel.iitm.ac.in>

Civil Engineering

Additional Reading:

1. Ramez Elmasri, Shamkant B.Navathe, "Fundamental of Database Systems", Pearson Addison Wesley, 2003.
2. Shashi Shekhar and Sanjay Chawla, "Spatial Databases: A Tour", Prentice Hall, 2003.

Coordinators:

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	Data Models and Data Structures <ul style="list-style-type: none"> • Introduction • GIS Data Model • Vector Data Structure • Raster Data structure • Geodatabase and metadata 	04
VI	Spatial Data Input and Editing <ul style="list-style-type: none"> • Primary Data • Secondary Data • Data Editing 	02
VII	Spatial Analysis <ul style="list-style-type: none"> • Introduction to spatial analysis • Vector Operations and Analysis • Network Analysis • Raster Data Spatial Analysis 	05
VIII	Cartographic Principles and Design <ul style="list-style-type: none"> • Introduction • Map layout • Data presentation • Toposheet Indexing • Distribution Maps 	02
IX	Interpolation <ul style="list-style-type: none"> • Introduction to Interpolation • Global Methods of Interpolation • Local Methods of Interpolation 	02
X	Web GIS <ul style="list-style-type: none"> • Introduction to Web GIS • OGC Standards and services 	02

References:

1. Burrough, P. A., and McDonnell, R. A., Principles of Geographical Information Systems, 2nd Edition, Oxford University Press, 1998.
2. Demers, M. N., Fundamentals of Geographic Information Systems, John Wiley & Sons, 3rd Edition, 2002.
3. Longley, P. A., Goodchild, M. F., Maguire, D. J., and Rhind,

D. W., Geographic Information Systems and Science, 2nd Edition, John Wiley and Sons, 2005.

4. Longley, P.A., Goodchild, M. F., Maguire, D. J., and Rhind, D. W., Geographical Information Systems: Principles, Techniques, Management and Applications, 2nd Edition, John Wiley & Sons, 2005.
5. Kang-tsung Chang, "Introduction to Geographic Information Systems", McGraw-Hill Book Company, 2006.