NOC:GIS in Ag-Essentials and Applications (GIS) - Video course

NPTEL

http://nptel.ac.in

Agriculture

Coordinators:

Dr. R. Nagarajan
Principal Research Scientist CSREIIT Bombay

Dr. Venkataraman Balaji
Director,Tech nology & Knowledge ManagementCommon Wealth of Learning, Canada

COURSE OUTLINE

Week	Topics
Week 1	Traditional information in agriculture practices
Week 2	Creation of georeferenced information base from existing data sets using GIS systems
Week 3	Understanding of rainfall potential clouds in decision making for irrigation
Week 4	Water resources availability – surface water from rainfall and ground water assessment
Week 5	Water demand assessment and deficit
Week 6	Drought vulnerability and risk assessment – meteorological, hydrological, agricultural
Week 7	Village level information system and utility – natural resources / socioeconomic aspects
Week 8	Sustainable village resources management

COURSE DETAIL

Week	Topic	Speaker
Week0	Introduction to the Course	Dr. R Nagarajan and Dr. V. Balaji
Week1	**Agriculture practices & Use of GIS for Course Correction**	
Lect 1	Our Agriculture Practices and Lessons	R Nagarajan
Lect 2	Climate and Scale of Change	R Nagarajan
Lect 3	Course Corrections	R Nagarajan
Lect 4	Modified agriculture Precision agriculture	R Nagarajan
Lect 5	Modified Agriculture Practice Climate Smart Agriculture	R Nagarajan

Week2	**Integration of Agriculture Related Information GIS**	
Lect 1	Maps and Information in Practice	R Nagarajan
Lect 2	Geographical Information System (GIS)	R Nagarajan
Lect 3	Types of Input	R Nagarajan
Lect 4	Analysis Map Overlay	R Nagarajan
Lect 5	Buffering & Perspective View	R Nagarajan
Lect 6	GIS Type & Available GIS Soft Wares	R Nagarajan
Week3	**Village/Land Information System**	
Lect 1	Village cadastral map and property card	R Nagarajan
Lect 2	Cadastral maps and contents	R Nagarajan
Lect 3	Creation of Cadastral information base	R Nagarajan
Lect 4	Land information system	R Nagarajan
Lect 5	Creation of village boundary based basin analysis – water management	R Nagarajan
Week4	**Weather Cloud reading & rainfall analysis in irrigation schedule**	
Lect 1	Needs and Weather forecast	R Nagarajan
Lect 2	Cloud types & rain bearing clouds	R Nagarajan
Lect 3	Weather satellites and cloud pattern reading	R Nagarajan
Lect 4	Rainfall and supplementary irrigation	R Nagarajan
Lect 5	Synergistic use	R Nagarajan

Week5	**GIS in estimation of water availability for effective planning**	
Lect 1	Surface rainfall run off assessment & model	R Nagarajan
Lect 2	Soil and Water Assessment tools (SWAT) model	R Nagarajan
Lect 3	Groundwater availability	R Nagarajan
Lect 4	Grounwater potential mapping	R Nagarajan
Lect 5	Water storage & water availability and release	R Nagarajan
Lect 6	Growth of crop area in command area and impact climate change	R Nagarajan
Lect 7	Impact of climate on agriculture	R Nagarajan
Week 6	**Implications of water availability deficit on agriculture**	
Lect 1	Crop water requirement & distribution loss	R Nagarajan
Lect 2	Village agriculture & other water demand and supply source	R Nagarajan
Lect 3	Water security assessment	R Nagarajan
Lect 4	Land degradation: Soil salinity	R Nagarajan
Lect 5	Water logging	R Nagarajan
Lect 6	Water balance under different rainfall	R Nagarajan
Week 7	**Drought assessment**	
Lect 1	Drought and characteristics	R Nagarajan
Lect 2	Drought vulnerability and risk assessment	R Nagarajan

Lect 3	Monitoring and warning	R Nagarajan
Lect 4	Drought Monitoring: a global perspective	V. Balaji
Lect 5	Drought Risk and Vulnerability Assessment: a global perspective	V. Balaji
Week8	**Sustainable resources management in Agriculture**	
Lect 1	GIS in sustainable agriculture	R Nagarajan
Lect 2	Assessment of existing water storage structures & rehabilitation	R Nagarajan
Lect 3	Sustainable Development and Agriculture a confluence of pressures	V. Balaji
Lect 4	Climate Change and drought a global perspective	V. Balaji
Lect 5	GIS and Drought Management: a global perspective	V. Balaji