

ASIAN INSTITUTE OF TECHNOLOGY
SCHOOL OF ENGINEERING AND TECHNOLOGY

AT76.9023 GIS for Health 2 (2-0)

Semester: Intersem

Rationale: This course will focus on new trends, concepts and essential technologies used for disease surveillance, hotspot mapping and healthcare planning. It is based on theory and hands on learning methodologies. Current and future satellites for environmental observations specifically related to health applications, mapping of disease locations, diseases' transmission in tropical and sub-tropical regions, ecological and use of environmental/ social/ economic data for predicting disease, freely available tools and techniques for emergency response will be discussed.

Catalog Description: GIS concepts. Disease surveillance, Hotspots, Health databases – standards and creation, Data manipulation and Geoprocessing for disease data analysis. Statistical analysis for health application, Disease trends. Disease risk mapping, Satellite Navigation for trauma Assistance, Risk Mapping.

Prerequisite: AT76.01 or any course related to GIS

Course Outline:

I. Introduction

1. Historical background of health geography,
2. Understanding the importance of geospatial factors related to health,
3. Importance of Remote Sensing and GIS based data in health mapping,
4. Importance of Environmental factors for health,

II. Map Visualisation of Various Factors related to Health Data

1. GIS and health data confidentiality
2. Local and global health mapping
3. Mortality and morbidity analysis
4. Social and demographic factor

III. Data Acquisition, Standards and Development

1. Data from public health departments, hospitals and international organisations
2. Data from Remote Sensing Imagery for habitat mapping
3. Global Positioning System (GPS) based data acquisition for patient record or environmental parameters
4. Data standards
5. Health dataset development

IV. Data manipulation and Analysis

1. Health dataset development
2. Spatial analysis of socio-economic factors related to health
3. Spatial analysis of physical and environmental factors related to health
4. Statistical analysis for disease trends, patterns and hotspot
5. Disease risk mapping

V. Healthcare Systems

1. Mobile technologies and decision support system for healthcare system
2. Internet GIS based health applications
3. Case studies related to health GIS

Text Books:

Lecture Notes

Poh-Chin Lai, Fun-Mun So and Ka-Wing Chan (2009):

Spatial Epidemiological Approaches in Disease Mapping and Analysis: Taylor & Francis

References:

Kristen S. Kurland and Wilpen L. Gorr (2009)

GIS Tutorial for Health, Third Edition: ESRI Press

Journals:

BMC Public Health

International Journal of Public Health

International Journal of Health Geographics

International Journal of Environmental Research and Public Health

Grading System:

Final grades will be computed according to the following percentage distribution: Assignments / Lab Assignments / Mini Project 60%, Final Examination 40%, Examination will be closed book

Instructor: Dr. Nitin K. Tripathi

School Recommendation:
Academic Senate Approval:

ADRC Approval: