

STRENGTHENING TOMORROW'S FUTURE



Role of Survey of India in Building Geospatial Capacity in the Country

भारतीय सर्वेक्षण विभाग

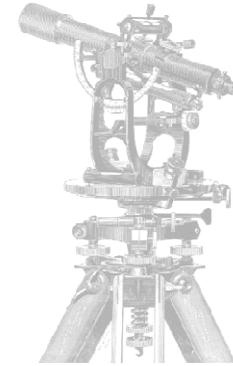
M. Dharma Raj
Additional Surveyor General



The Centre for Survey Training and Map Production, now known as the **Indian Institute of Surveying & Mapping(IISM) of Survey of India, was established at Hyderabad on 6 May 1967 under technical assistance from United Nations Development Programme (*UNDP*).**

IISM - BASIC ROLE:

- ❖ Basic & Advanced training in the field of Surveying & Mapping (Geospatial Technologies).
- ❖ Short Term courses in the field of Surveying & Mapping (Geospatial Technologies).
- ❖ Human Resource Development in this field for Afro-Asian countries.
- ❖ Capacity Building in this field for different levels of Officers & Staff of State & Central Govt. Departments and other Public Sector Units.
- ❖ Seminars & Workshops on state of art Technology in Surveying and Mapping.

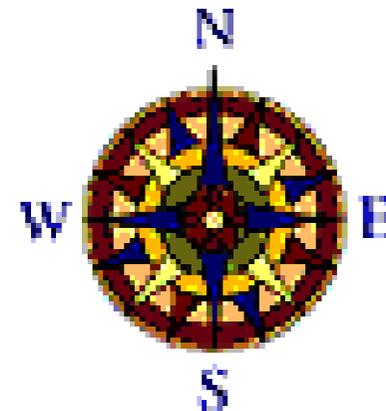
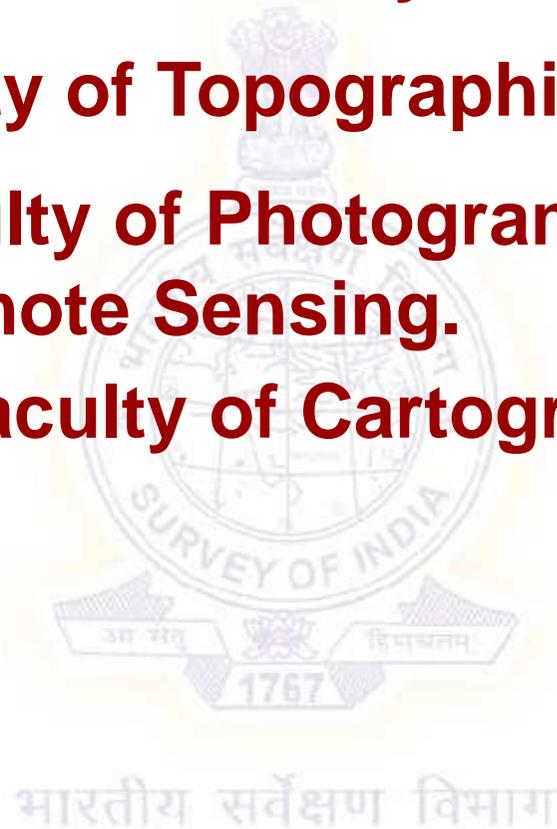


IISM - Important Milestones:

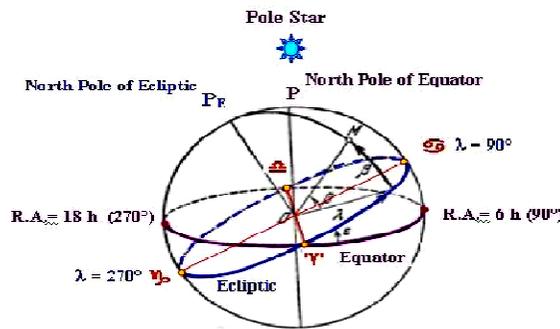
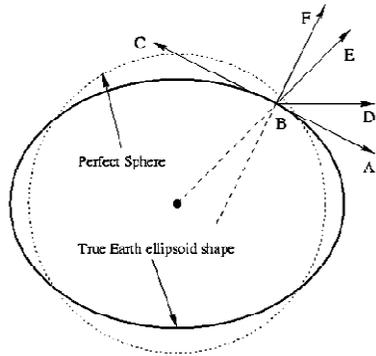
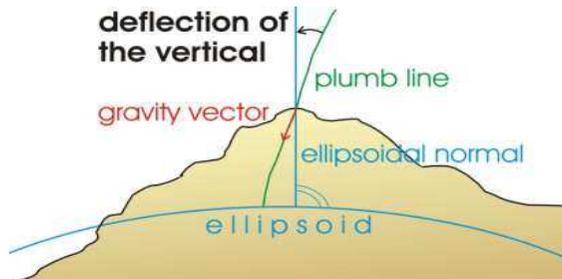
- **More than 90 batches of the 2-year courses have passed out since its inception.**
- **About 30,000 alumni.**
- **Alumni from other Afro-Asian Countries - 600.**

IISM - Faculties

- Faculty of Geodesy
- Faculty of Topographical Surveying & LIS
- Faculty of Photogrammetry & Remote Sensing.
- Faculty of Cartography, DM & GIS



❖ Faculty of Geodesy



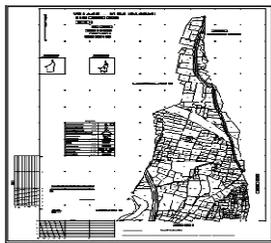
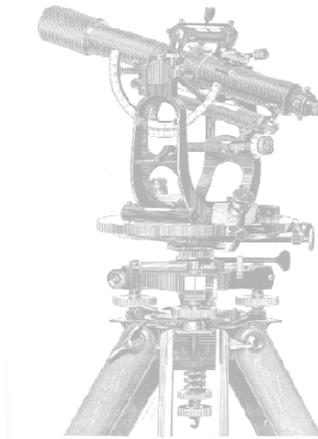
Physical &
Geometric
Geodesy

Geodetic
Astronomy

Map
Projection

Satellite
Geodesy

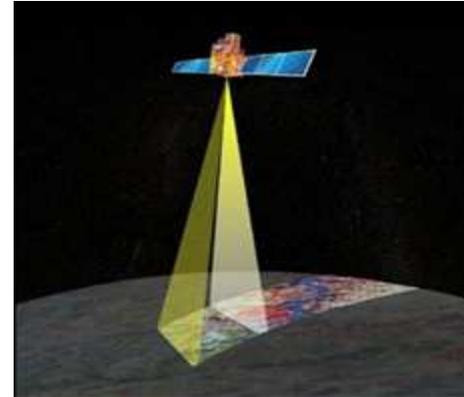
❖ Faculty of Topographical Surveying & LIS (TS&LIS)



**Topographical
& Cadastral
Surveying**

**Surveying using Conventional and
Modern Instruments**

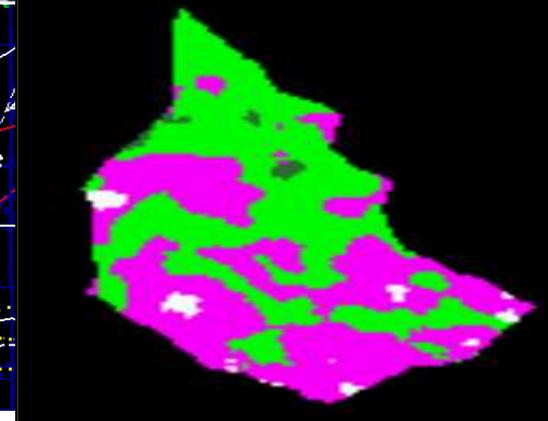
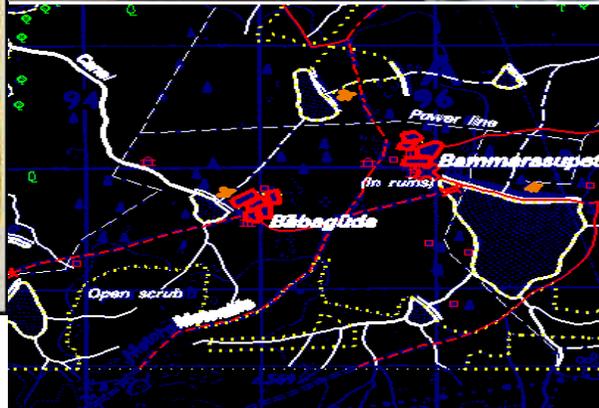
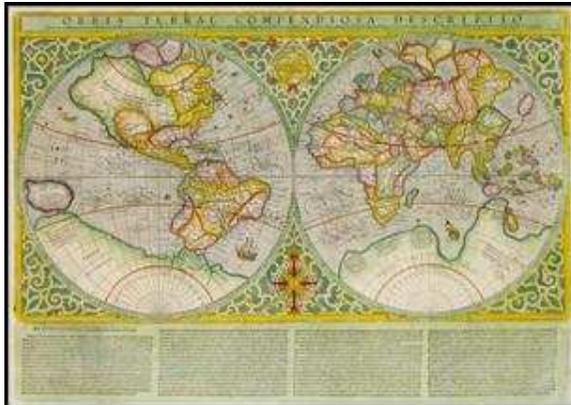
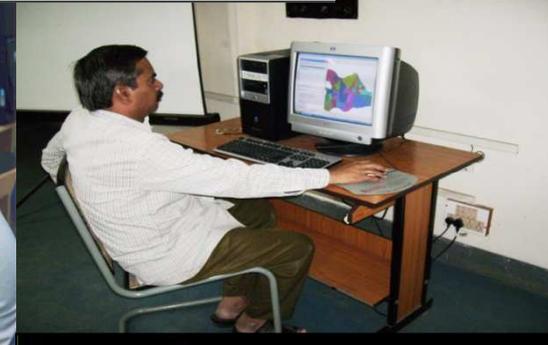
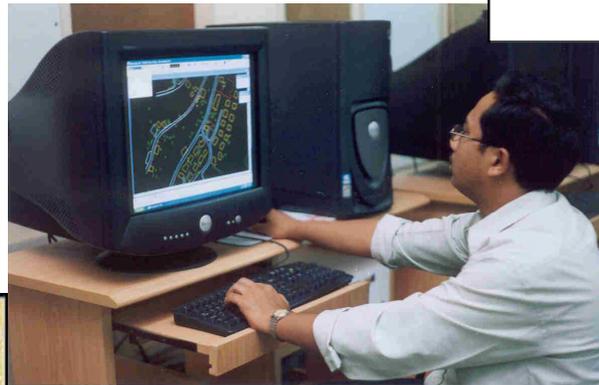
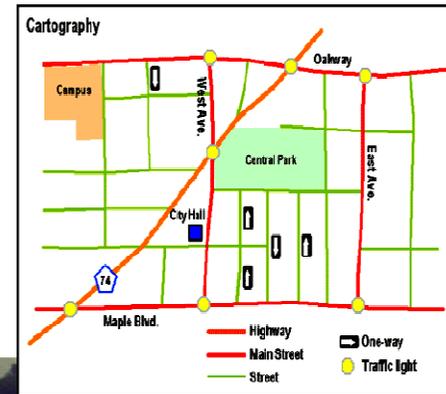
❖ Faculty of Photogrammetry & Remote Sensing (P&RS)



**Analogue & Digital
Photogrammetry**

**Satellite
Image
Processing**

❖ Faculty of Cartography, Digital Mapping & GIS (C,DM&GIS)



Cartography

Digital Cartography

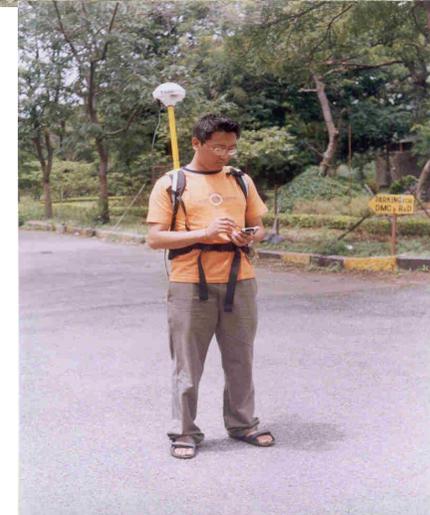
GIS

Training Modules:

Theory &
Demo



Field
Exercise



Lab
Practical



Training Courses For Various Programmes:

- **Land Resources and Rural Development – NLRMP**
- **Urban Development – NUIS**
- **Natural Resource Management - NRDMS and NNRMS**
- **Disaster Management**
- **Integrated Coastal Management – ICZM**
- **Infrastructure Development**
- **National Security – For Armed and Para-Military Forces**

Syllabus / Subjects:

- **TOPOGRAPHICAL SURVEY**
- **GEODESY**
- **CARTOGRAPHY**
- **GEOGRAPHIC INFORMATION SYSTEMS**
- **MAP REPRODUCTION**
- **DIGITAL MAPPING**
- **PHOTOGRAMMETRY & REMOTE SENSING**
- **APPLIED MATHEMATICS AND ADJUSTMENT COMPUTATION**
- **MANAGEMENT SCIENCE**
- **ENGINEERING SURVEY**
- **CADASTRAL SURVEY**

Various Training Programmes:

Academic Courses (In collaboration with JNTU, Hyderabad)

M.Tech (Geomatics)	2 years
M.Sc (Geospatial Sciences)	2 Years

Basic Courses

Surveying Engineer -----	2 years
Surveying Supervisor -----	2 years
Surveying Technician -----	2 years

Advance Courses

Advanced course on GIS	--- 12 months
Advanced Photogrammetry & Remote sensing	--- 12 months
Advanced Geodesy	--- 12 months

Specialised / Short Term courses

Fundamental of Survey Engineering	-- 12 Weeks
Control Survey by GPS and Total Station	-- 8 Weeks
Map Updation by Mobile Mapping	-- 2 Weeks
Digitisation of Cartographic Documents	-- 10 Weeks
GIS Applications	-- 11 Weeks
Digital Photogrammetry & Remote Sensing	-- 10 Weeks
Cadastral Survey	-- 9 Weeks
Office Management	-- 6 Weeks
Office Procedures	-- 6 Weeks

Seminar/Workshops

GIS and modern trends in Mapping -----	1 Week
GPS and Total station Concept & applications -	1 Week
Datum, Coordinate System ,Map Projection	1 Week
Photogrammetry for Policy makers-----	1 Week
Modern Survey instruments-----	1 Week

M. Tech(Geomatics) Syllabus:

1st SEMESTER:

1.1 Topographical Surveying and Mapping

1.2 Introduction to Geodesy

1.3 Elements of Photogrammetry

1.4 Remote Sensing

1.5 Object Oriented Programming System & DBMS for GIS

1.6 Lab on OOPS & DBMS

1.7 Lab on Photogrammetry Remote Sensing

2nd SEMESTER:

2.1 Digital Photogrammetry

2.2 Advanced Geodesy

2.3 Geographical Information System (GIS), Spatial Analysis and Modelling

2.4 Digital Cartography, Visualization and Web GIS

2.5 Project Management and Organizational Development Lab

2.6 Geodesy, Surveying and Geomatics Labs

3rd SEMESTER:

3.1 Elective I

- Spatial Data Infrastructures
- Cadastral & Land Administration
- Natural Resource and Disaster Management
- Water Resource Management

3.2 Elective II

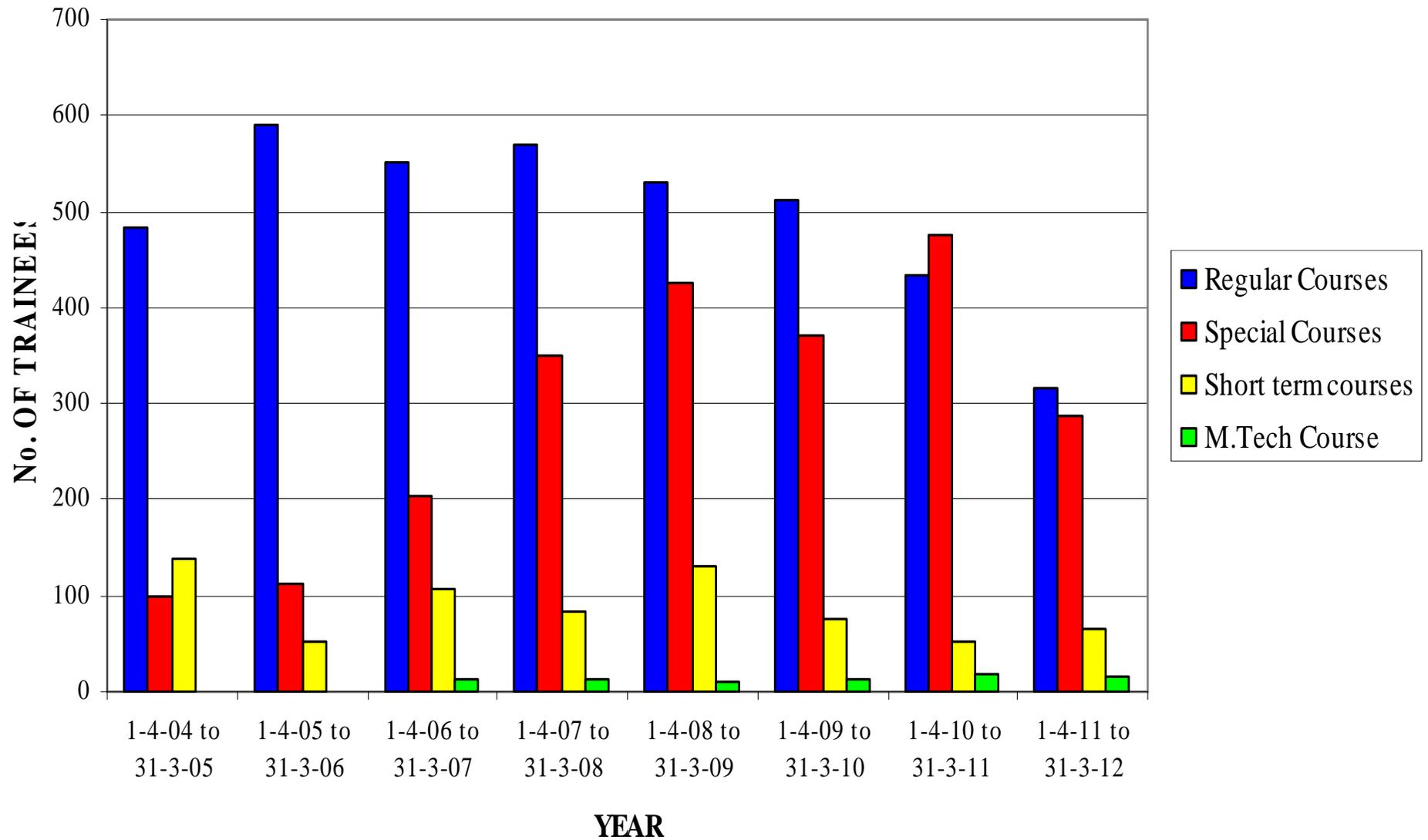
- World Wide Web Creation for Spatial Data Dissemination
- Urban Planning & Land Administration
- Environment Management
- Space & Marine Geodesy

3.3 Mini Project

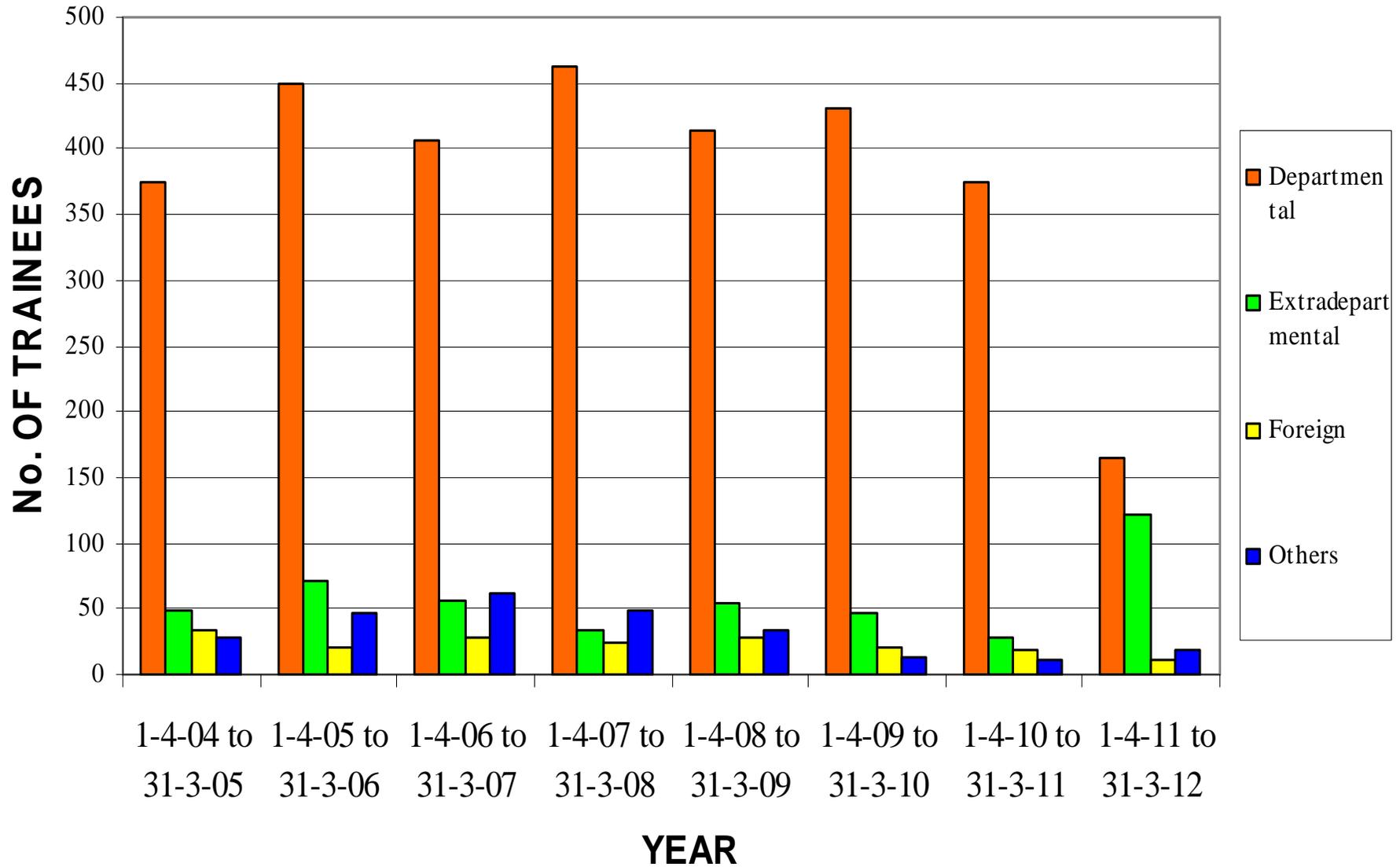
4 th SEMESTER

Final Project at any Industry practical

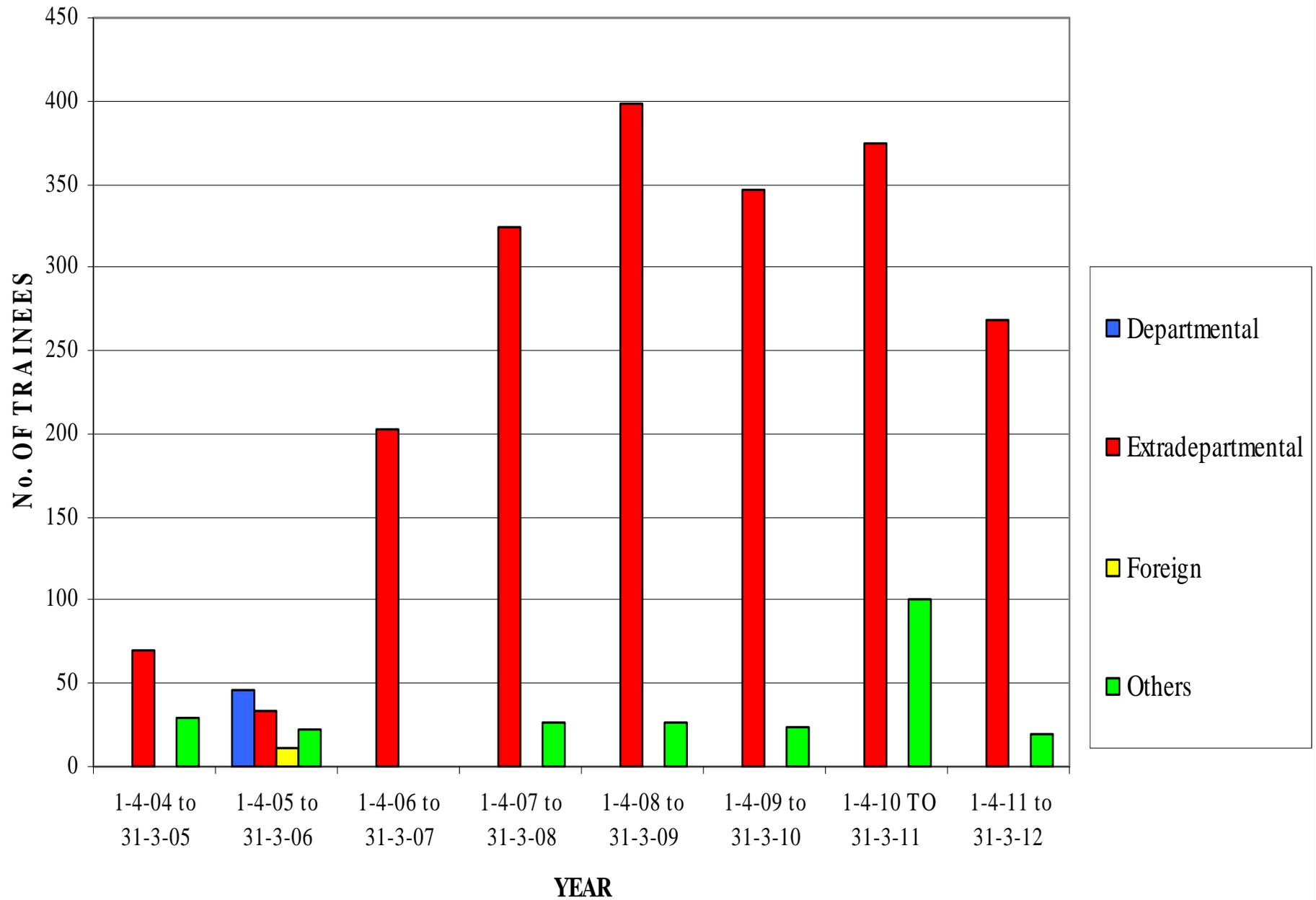
VARIOUS TYPES OF COURSES RUN AT IIS&M



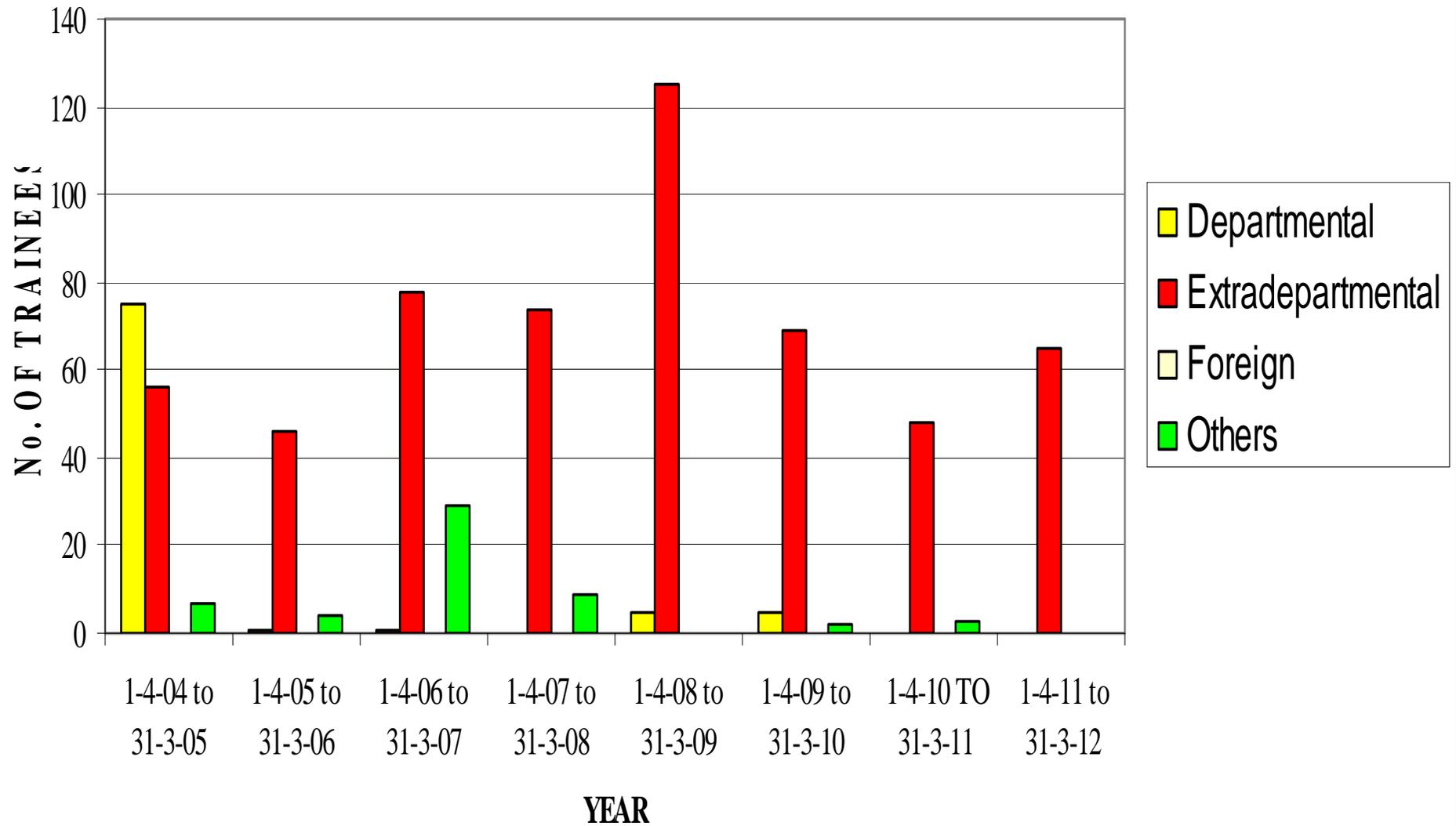
REGULAR COURSES AT IIS&M



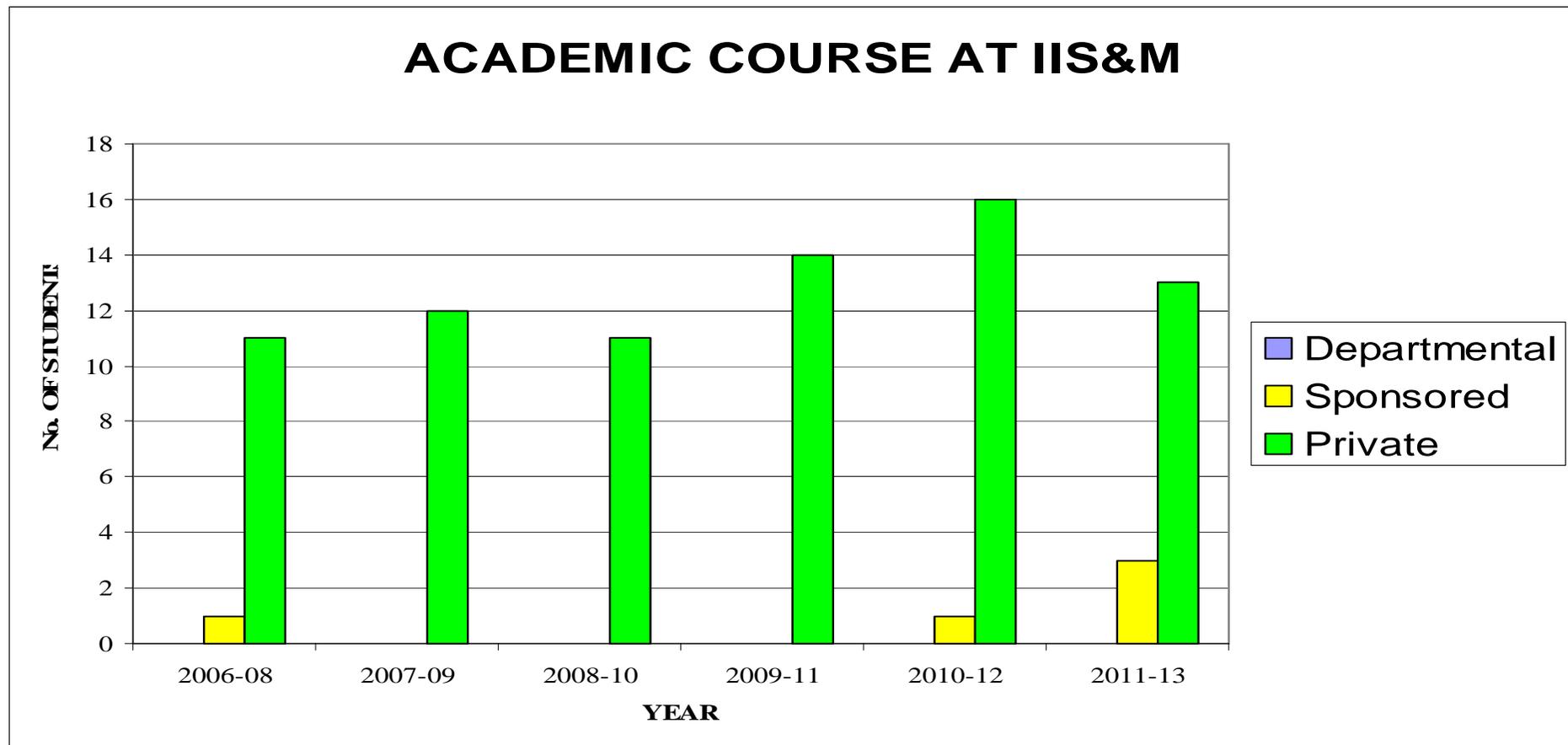
SPECIAL COURSES AT IIS&M



SHORT TERM COURSES AT IIS&M



M.Tech. (Geomatics) conducted in collaboration with JNTU, Hyderabad since 2006 –No. of Students.



Courses undertaken by various organisations.

☯ 340 – Digitization of Cartographic Documents

DLR&S, West Bengal

Intelligence Bureau (MHA)

University of Kashmir

ISRO, Bangalore

BSF

Indian Army

Geology and Mining, Jharkhand

AF Station, New Delhi

☯ 440 – GIS Applications

University of Kashmir

IMD, New Delhi

Border Security Force

Government of Afghanistan



690 – Control and Detail Survey by GPS and Total Station

Singareni Collieries

Revenue Department of Government of Mizoram

ESSAR Oil Limited, Kolkata

Archeological Survey of India

Government of Nagaland

Government of Meghalaya

S.V. Polytechnic College, Bhopal

NHPC, Faridabad

Geology and Mining, Dehra Dun

DLR&S, West Bengal

NRSC, Hyderabad

NIT, Durgapur

OIL India, Assam

 **480 – Digital Photogrammetry & Remote Sensing**

**Army Head Quarters, New Delhi
Government of Afghanistan
ARC, Cabinet Secretary, New Delhi
Osmania University
NRSC, Hyderabad
JNTU, Hyderabad**

 **740 Advanced Course on GIS**

**National Atlas Thematic Mapping
Organization
Students from Universities
Govt of Mizoram and Sikkim**

GIS & Modern Trends in Mapping

National Police Academy

Singareni Collieries

Madras Cements

University of Mumbai

Kudremukh Iron Ore

ITBP

L&RS, Gwalior

Oil India Limited

Archeological Survey of India

Atomic Energy

Various State Government Revenue Officials

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 **Application of GIS for Land Use**

Osmania University

Bapatla Engineering College

Bhadrak Institute of Engineering, Orissa

Orissa Engineering College

Muffakan jah Engineering College, Hyderabad

IICT, Gandhinagar

 **Training Designers Sensitive to Geo-informatics Centre**

National Institute of Design, Ahmedabad

 **Training to Trainers in Surveying**

National Police Academy, Sivrampally, Hyderabad

Chukka Hydro Power Corporation, Bhutan



Special Course on Role and Use of Geocoded Maps of Different Scales in Water Resources

Andhra University



Capacity Building under NUIS Scheme

Town and Country Planning Organization, New Delhi

Decision Makers Level --- 3 batches

Supervisory Level --- 3 batches

Operator Level --- 3 batches



Orientation programme for IAS Officers and probationers

State Government of

Punjab

Andhra pradesh

Karnataka

Orissa

Kerala

☯ **Seminar on Photogrammetry and Remote Sensing – An Overview for Policy Makers**

MD University, Rohtak

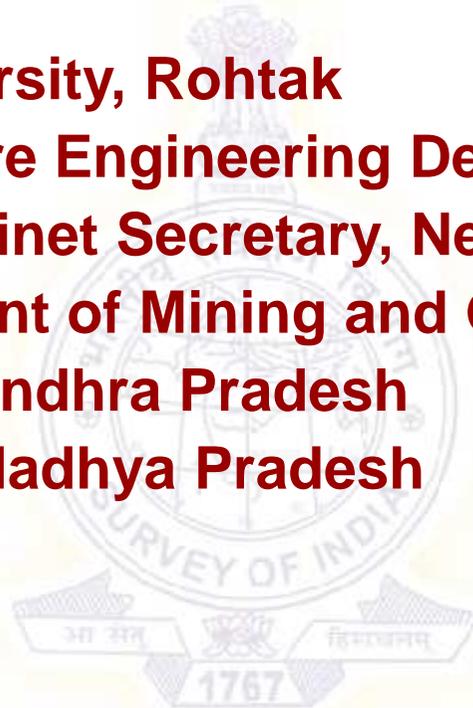
Agriculture Engineering Department, Tamil Nadu

ARC, Cabinet Secretary, New Delhi

Department of Mining and Geology

DLR&S, Andhra Pradesh

DLR&S, Madhya Pradesh



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 **Special Course on GPS**
NATMO, Kolkata

 **Seminar on GPS and Total Station – Concepts and Applications**

DLR, Nagaland

NLC Limited, New Delhi

Forest Survey of India, Dehra Dun

SAIL, Raurkela

Shree Cements, Chennai

Irrigation and CAD Department, Andhra Pradesh

CMRI, Dhanbad

NMDC

भारतीय सर्वेक्षण विभाग



Training in Photogrammetry, GPS, GIS

**AP Survey Training Academy
Defence Estates Organisation**



Special Training in Photogrammetry

Yogi Vemana University



Training on Latest Survey Techniques

Power Grid Corporation



Awareness Programme on Modern Surveying Methods

**Central Government Water Board
AP Survey Training Academy
DLR&S, Karnataka**

 **Cadastral Survey**

L&R, Government of Gujarat
DLRS, Government of Mizoram
Government of Afghanistan through MEA
Revenue Department of Lakshdweep

 **Special Course Training in GPS Surveys**

IRCON International Limited



 **Seminar on Modern Survey Instruments and Techniques**

**Geology and Mining Department
GSGS, Army Head Quarters**

 **Special Course on GPS and Total Station**

**Irrigation and CAD Department, Andhra Pradesh
Survey & Settlement, Tamil Nadu
Survey & Land Records, Kerala**

 **Special Course on Advanced Investigation Techniques**

Irrigation and CAD Department, Andhra Pradesh

भारतीय सर्वेक्षण विभाग

Hostel Accommodation Available

	Furnished Rooms	Non Furnished / Ordinary	Ladies Rooms	Family Rooms	TOTAL
Mackenzie Hostel (Double Occupancy)	140	Nil	9	11	160
Lambton Hostel (Single)	Non A/C - 34	-	-	-	34
-do- (Single)	A/C - 5	-	-	-	5
-do- (Double)	A/C - 16	-	-	-	16

Need for Building Geospatial Capacity

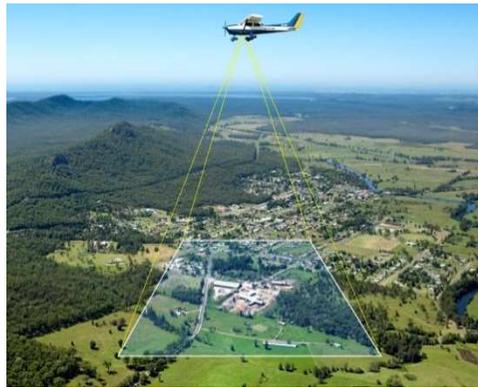
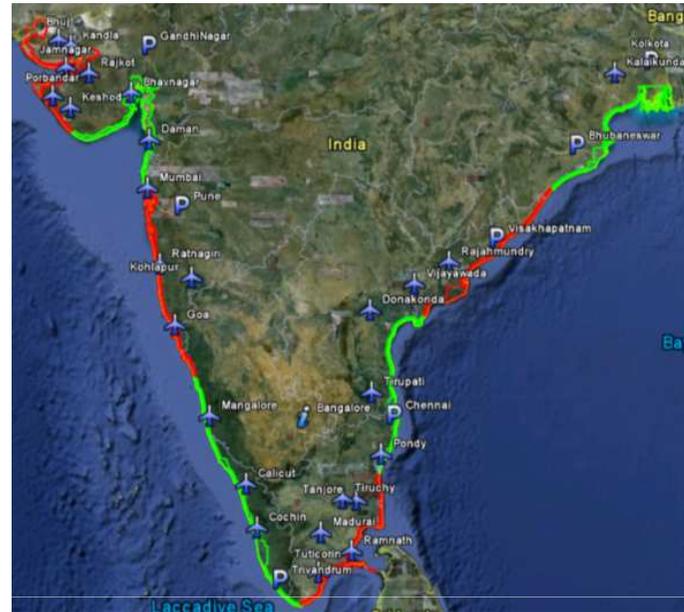
- Development of skilled manpower
- Create adequate infrastructure for education/ training in Geospatial Science & Technologies
- Create Awareness about Geospatial Information among all stakeholders
- Build Individual and Institutional Capabilities
- Effectively Apply Geospatial Information for Governance, Business and Societal needs.

SPATIAL INFORMATION – FOR GOVERNANCE

- Groundwater Prospects and Recharge Zone Mapping
- National Land Records Modernisation Programme (NLRMP)
- National Wastelands Mapping
- National Wetlands Inventory and Assessment
- Snow and Glaciers Studies
- Coastal Regulation Zone Studies
- Forecasting Agricultural output
- Assessment of Irrigation Potential
- National Agricultural Drought Assessment and Monitoring System
- Biodiversity Characterization
- National Urban Information System (NUIS)
- Forest Fire Response and Assessment
- Water Resources Information
- Space Based Information System for Decentralized Planning
- Natural Resources Census
- Flood Mapping and Monitoring
- Watershed Monitoring and Development
- Potential Fishery Zone (PFZ) Forecasting
- Defence Preparatory Planning
- Town & Country Planning
- Disaster Management
- **Integrated Coastal Zone Management (ICZM)**
- **Encroachments Detection & Management**

INTEGRATED COASTAL ZONE MANAGEMENT (ICZM)

Delineation of the **Hazard Line** along the entire coast of India is part of the many goals and objectives of the ICZM project

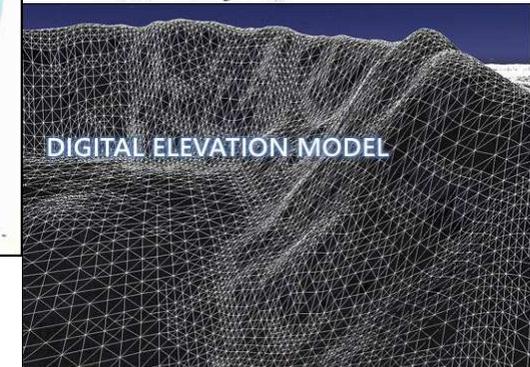
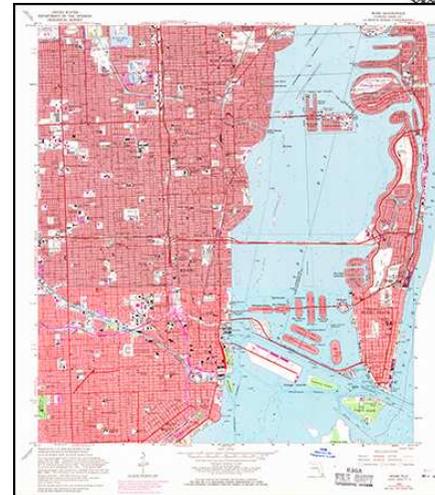
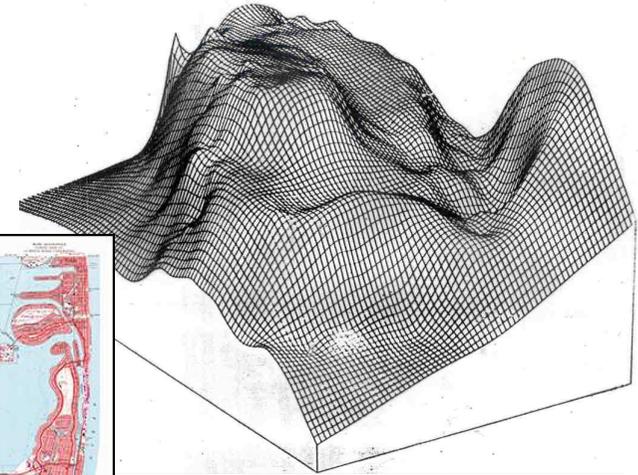


ICZM seeks, over the long-term, to balance environmental, economic, social, cultural and recreational objectives, all within the limits set by natural dynamics



ICZM - PROJECT HIGHLIGHTS

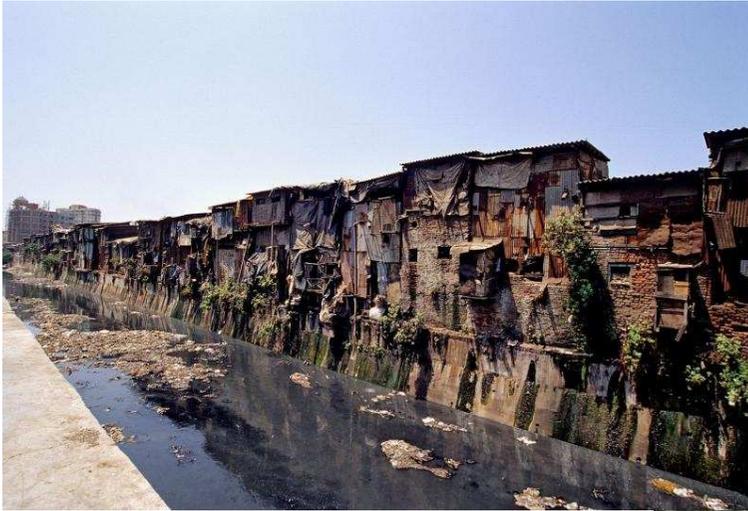
- 0.5 m elevation contour map upto a width of 7km on 1:10,000 scale to serve as base map.
- 3-D digital elevation model (DEM).
- Tidal data Analysis.
- Composite **Hazard Line** by overlaying Flood Line & Erosion Line.



February 4, 2013

Geospatial Forum - 2013

ENCROACHMENTS



Spatial information helps in assessing the quantum of encroached land/water area

Identified encroachments can be easily removed



Types of Encroachments:

- **Water Bodies in Urban / Rural Areas**
- **Forest Lands**
- **Govt. Lands**
- **Public Lands**
- **Mines**
- **Defence Lands / Cantonments**
- **Railway Lands**
- **Roads**
- **Private Lands**

Challenges: Apathy, Lack of Awareness, Greed and Behavior as if there is no Tomorrow.

Regulatory Policies Governing Geospatial Sector:

- National Map Policy 2005
- Remote Sensing Data Policy 2011
- CRZ Notification 2011
- National Data Sharing and Accessibility Policy 2012
- .
- .
- .
- .
- .
- **Right to Spatial Information Policy ??**

“Strengthening Tomorrow’s Future”



Thank You

<http://soisti.ap.nic.in>