IIRS EDUSAT PROGRAM DISTANCE LEARNING INITIATIVE FOR INDIAN UNIVERSITIES

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Presentation outline

- Institute responsible for the initiative
- Uniqueness of EDUSAT satellite
- About the EDUSAT program
- Results and outputs of the EDUSAT program
- Feedback analysis
- Conclusions

Brief about IIRS – the host institute of EDUSAT Program

- Premier institute in technology transfer since 1966 (i.e. more than 44 years)
- Part of Indian Space Research Organisation
- Dissemination of Capacity Building under NRSC
- One of it's kind in South east Asia when established
- Capacity Building programs are ISO certified
- Trainee turnout 7600 including 750 foreign nationals under regular courses
- EDUSAT program – more than 3000 in 3 years
- Hosts UN Centre CSSTEAP
- Fields of expertise
  - Aerial Photo Interpretation
  - Remote Sensing
  - Geoinformatics
  - Natural Resource Management
  - Environment and Disaster management

... responsible for the initiative and operationalize it.

Role of ISRO/NNRMS in Capacity Building

- Funding Supports University/Institute for establishment of EO & Geo-information facility
- Identify Centre of Excellence for training EO & GIS to various user departments
- Universities / Colleges given more attention in capacity building

Types of Distance learning programs

- Traditional correspondence Courses
- E- learning Programs
- Internet Interactive groups for e-learning
- Web/Internet Resources and self learning
- Live and interactive programs

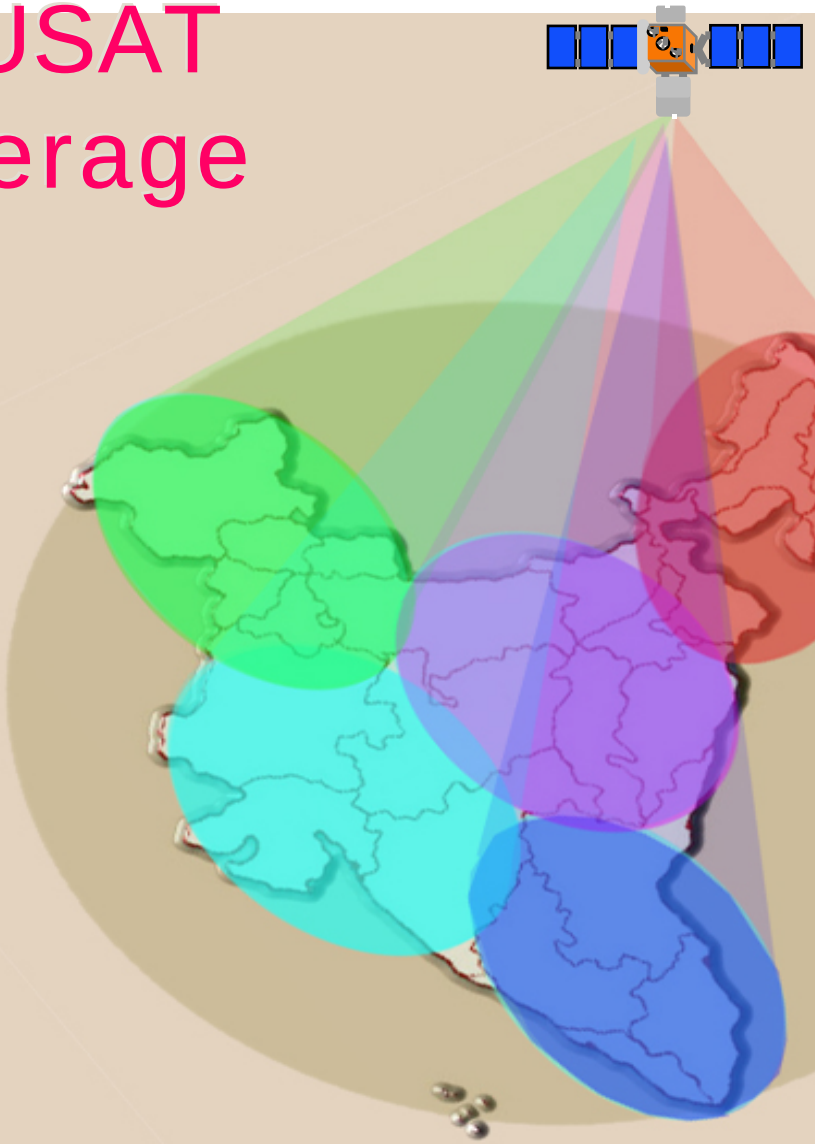
.... EDUSAT program is live and interactive

About the EDUSAT

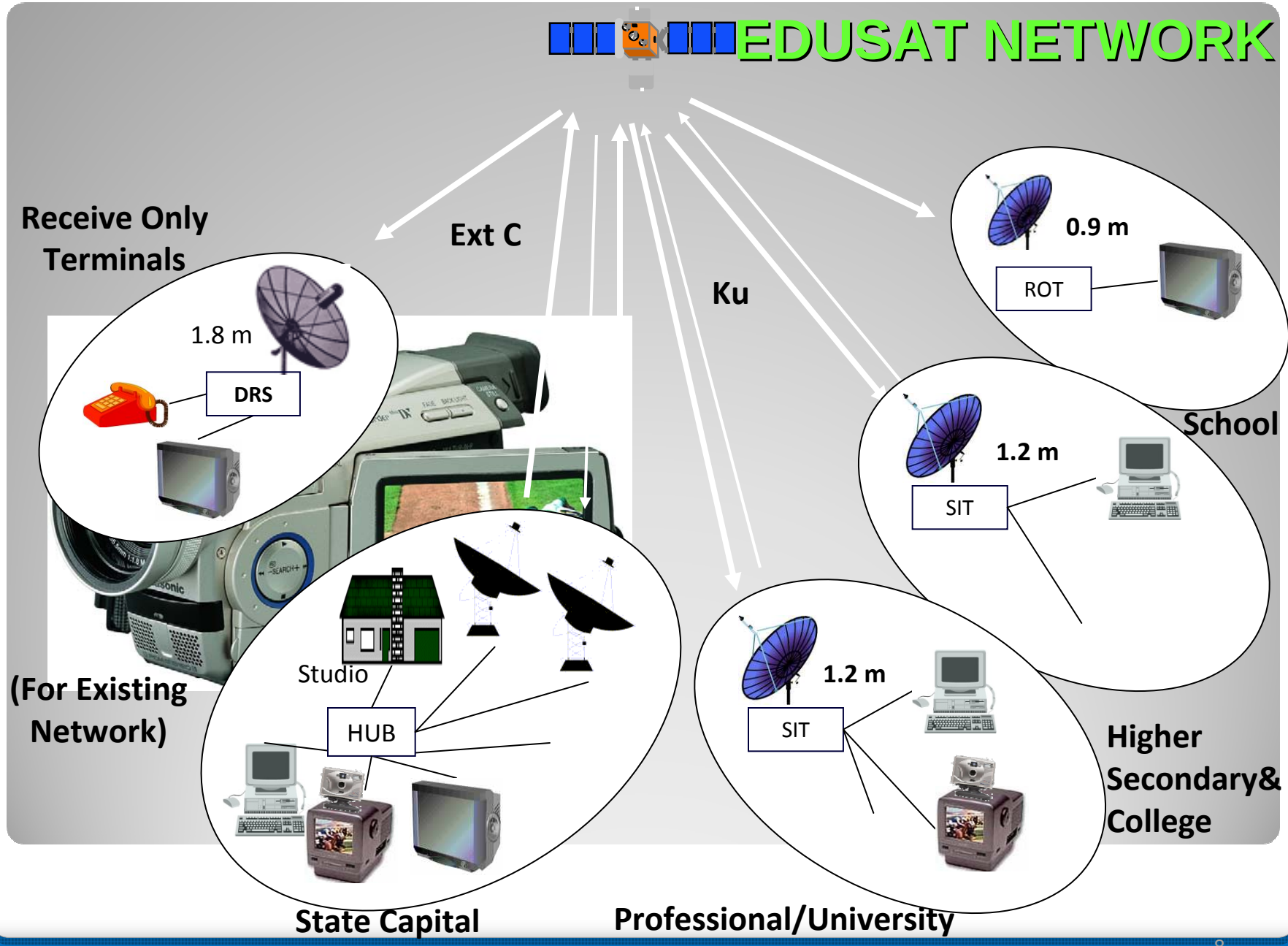
- Dedicated for interactive distance education system
- EDUSAT carries five Ku-band (14/11 GHz Tx/Rx) transponders
- So far 70 broadcast and interactive networks have been established by ISRO, covering 20 States having more than 50, 000 classrooms
- IIRS is the first of it's kind to conduct EDUSAT based distance learning program in Basic concepts of "RS, GIS and GPS"

.... EDUSAT satellite is available for the service of the nation

EDUSAT Coverage



- ✓ 5 Spot Beams in Ku Band
  EIRP=53dBW;
  G/T=+7.0 dB/^{0}K
- ✓ 1 National Beam in Ku Band
  EIRP=50dBW
  G/T=+3.0 dB/^{0}K
- ✓ 6 National Beams in Ext C Band
  (6 Channels)
  EIRP= 37.0dBW


EDUSAT NETWORK
Receive Only Terminals
Ext C
Ku
1.8 m
DRS
0.9 m
ROT
School
1.2 m
SIT
(For Existing Network)
Studio
HUB
1.2 m
SIT
Higher Secondary& College
State Capital
Professional/University

EDUSAT BASED DISTANCE LEARNING

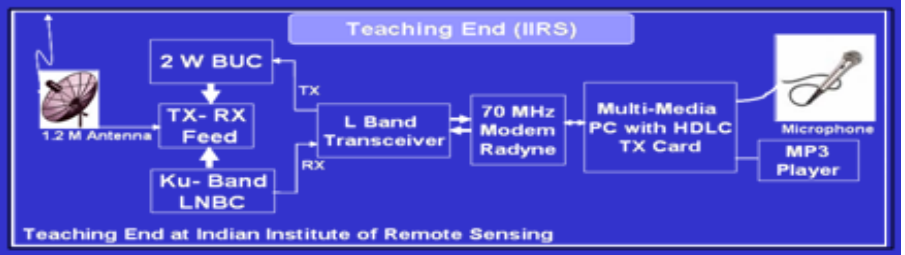
Concept of EDUSAT Based Training in RS & GIS

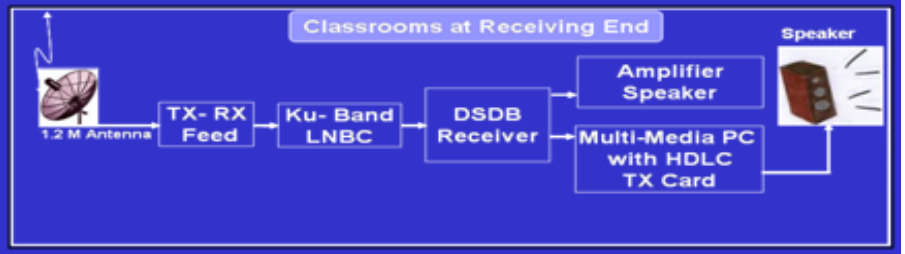
IGNOU/UGC-CEC/CIET-NCERT/State Hub

Teaching Hub

IIRS

2 – way Communication





Participating Universities (40 No.)

❖ Anna University, Chennai	❖ Thanjavur, Tamil University	❖ H.N.B.G.U, Srinagar	❖ Gujarat University	❖ Shivaji Univ.
❖ Jamia Milia Islamia, Delhi	❖ Rajiv Gandhi Univ., Itanagar	❖ M.D.S. University, Ajmer	❖ CEPT University	❖ JSAC
❖ NIT, Warangal	❖ Kashmir University	❖ Baramulla University	❖ MG Science Institute	❖ Jhadhavpur Univ.
❖ Banasthali Univ. , Rajasthan	❖ Mysore University	❖ Jammu University	❖ Gauhati University, Assam	❖ APSCOST Vijayawada
❖ JNU, Delhi	❖ Tripura University	❖ HARSAC	❖ Bharathiar University, Coimbatore	❖ The New College Kolhapur
❖ Pune University	❖ BIT, Ranchi	❖ Hissar	❖ PSG College, Coimbatore	❖ Silchar Univ.
❖ Hari Singh Gour University	❖ IIT Roorkee	❖ Kurukshetra University	❖ Madras University	❖ ADM College
❖ Madurai Kamaraj University	❖ Presidency College, Kolkata	❖ GJUST	❖ Nagpur University	❖ Walchand College of Engg. Science

What is the uniqueness of EDUSAT training program?

- Live and interactive
- Records and replay many times
- Connectivity one to one to one to many
- Coverage footprint over whole India
- Open access to all
- Functional with SIT (3000 $) or ROT (1300 $)
- Course material including presentation slides uploaded in advance

Course structure and curriculum

Course Name: Basic s of Remote Sensing, GIS and GPS

Module	Duration
1. Remote Sensing & Digital Image Processing	2 Weeks
2. Global Positioning System	1 Week
3. Geographical Information Systems	2 Weeks
4. RS & GIS Applications and advances	1 Week

Course contents

Module 1: Remote Sensing & Digital Image Processing

Course Content	Duration
Principles, platforms & sensors, thermal & MW Remote Sensing, spectral properties, atmospheric interactions, satellite data products, pre-processing, enhancement techniques, geometric corrections, supervised and unsupervised classification algorithms	Total 20 hrs (10 hrs lectures, 5hrs interaction /discussion, 5 hrs demonstration/hands on) - 2 Weeks

Course contents

Module 2: Global Positioning System

Course Content	Duration
Overview of GPS/other Navigation Systems, Signals, constellation and functionality, Navigation Principles, code and carrier wave measurements, GPS Errors, Principles of Differential GPS, Surveying Methods and integration with GIS themes, Application case studies Comparison of different navigation systems	Total 10 hrs (5 hrs lectures, 2.5 hrs interaction /discussion and 2.5 hrs demonstration/hands on) – 1 Week

Course contents

Module 3: Geographical Information System

Course Content	Duration
Overview of GIS, spatial data models (vector & raster), data formats and structures, non spatial data models, inputting, editing and creation of topology, H/W & S/W for GIS, coordinate systems, datum, projection, spatial analysis, network analysis, digital elevation models and applications, cartography, visualisation, output generation and web resources of GIS	**2 Weeks** Total 20 hrs (10 hrs lectures, 5hrs interaction /discussion, 5 hrs demonstration /hands on)

Course contents

Module 4: RS & GIS Application

Course Content	Duration
Operational RS applications in India, crop area, type and yield forecasting, forest inventory, ecosystem and biodiversity characterisation, geology, geomorphology and hydrogeology and engineering geology, water resource assessment, watershed development, irrigation water management, flood and drought monitoring, oceanography and coastal zone management, high resolution satellite data and urban applications.	Total 16 hrs (12 hrs lectures, 4hrs interaction / discussion,)

Course Material

Lecture
Reading Material

Module: RS & DIP
Live Video Recordings

Course Material
Live Video Recordings

Module: GPS

Module: RS & GIS Application

List of invited and eminent faculty

List of Universities / Institutions and outputs

S.No.	University	Students registered	Appeared in Exams	Passed	% Success
1	Pune University	126	109	104	95%
2	Madurai Kamraj University	51	44	42	95%
3	Thanjavur Tamil University	17	17	12	71%
4	Banasthali University	76	71	67	94%
5	Kashmir University, Srinagar	38	37	36	97%
6	MDS University, Ajmer	62	59	59	100%
7	HNB Garwhal Univ., Srinagar	14	05	05	100%
8	Gauhati University, Assam	49	32	26	81%
9	HARSAC, Hissar	05	05	05	100%
10	Guru Jambheshwar University ST	10	06	06	100%
11	Kurukshetra University	23	21	20	95%
12	Guru Nanak Khalsa College	02	NIL	NIL	NIL

Cont...

List of Universities / Institutions and outputs

S.No.	University	Students registered	Appeared in Exams	Passed	% Success
13	Sagar University	53	20	18	90%
14	BIT Mesra	60	54	37	69%
15	Jammu University	51	50	28	56%
16	PSG College Coimbatore	109	89	87	98%
17	Jamia Milia Islamia	14	02	02	100%
18	Anna University	39	37	35	95%
19	JNU, Delhi	62	40	25	63%
20	Gujarat University	78	28	02	07%
21	CEPT University	81	43	31	72%
22	M.G. Science Institute	07	07	NIL	NIL
	Total	1027	776	647	83%

Statistical Record 1st Edusat Course Interactive Session

Module	Subjects	No of Lecture hours	Hours of interactive session	Total No of questions	Univ. interacted	Total univ.	% of interaction
1	RS & DIP	15	5	212	8	12	67 %
2	GPS	7.5	2.5	53	9	12	75 %
3	GIS	15	5	80	6	12	50 %
4	RS & GIS Appl.	7.5	2.5	43	6	12	50 %
Total		**45**	**15**	**388**	**29/4**	**12**	**60.4 %**

RS & DIP – Remote Sensing & Digital Image Processing
GPS - Global Positioning System
GIS - Geographical Information System
Appl. - Applications

Statistical Record 2nd Edusat Course Interactive Session

Mod	Subjects	No of Lecture hours	Hours of interactive session	Total No of questions	Univ. interacted	Total univ.	% of interaction
1	RS & DIP	10	5	352	18	22	82 %
2	GPS	4	2.5	83	10	22	45%
3	GIS	13	6.5	246	12	22	55%
4	RS & GIS Appln	7	3.5	107	9	22	41%
Total		34	17.5	788	49/4	22	56%

RS & DIP – Remote Sensing & Digital Image Processing
GPS - Global Positioning System
GIS - Geographical Information System
Appln - Applications

Third & Fourth
EDUSAT Course Summary

	Third Course	Fourth Course	Total
No. of Lectures hrs	36	35.30	71.30
Hrs of Interactive Session	18	12	30
Total hrs	54	47.30	101.30
Total No. of Participants	915	931	1846
Total University Participated	40	50	90
Total University Interacted	25	22	47
Course Duration	25.08.08– 20.11.08	12.08.09 – 30.10.09	

Modules:

RS & DIP – Remote Sensing & Digital Image Processing
GPS - Global Positioning System
GIS - Geographical Information System
Appl. - Applications

EDUSAT Course Summary

	First Course	Second Course	Third Course	Fourth Course	Total
No. of Lectures hrs	45	34	36	35.30	150.30
Hrs of Interactive Session	15	17.5	18	12	62.50
Total hrs	60	51.5	54	47.30	212.80
Total No. of Participants	349	931	915	931	3126
Total University Participated	12	22	40	50	124
Total University Interacted	09	18	25	22	74
Course Duration	29.01.07 – 09.04.07	19.09.07 – 03.12.07	25.08.08– 20.11.08	12.08.09 – 30.10.09	

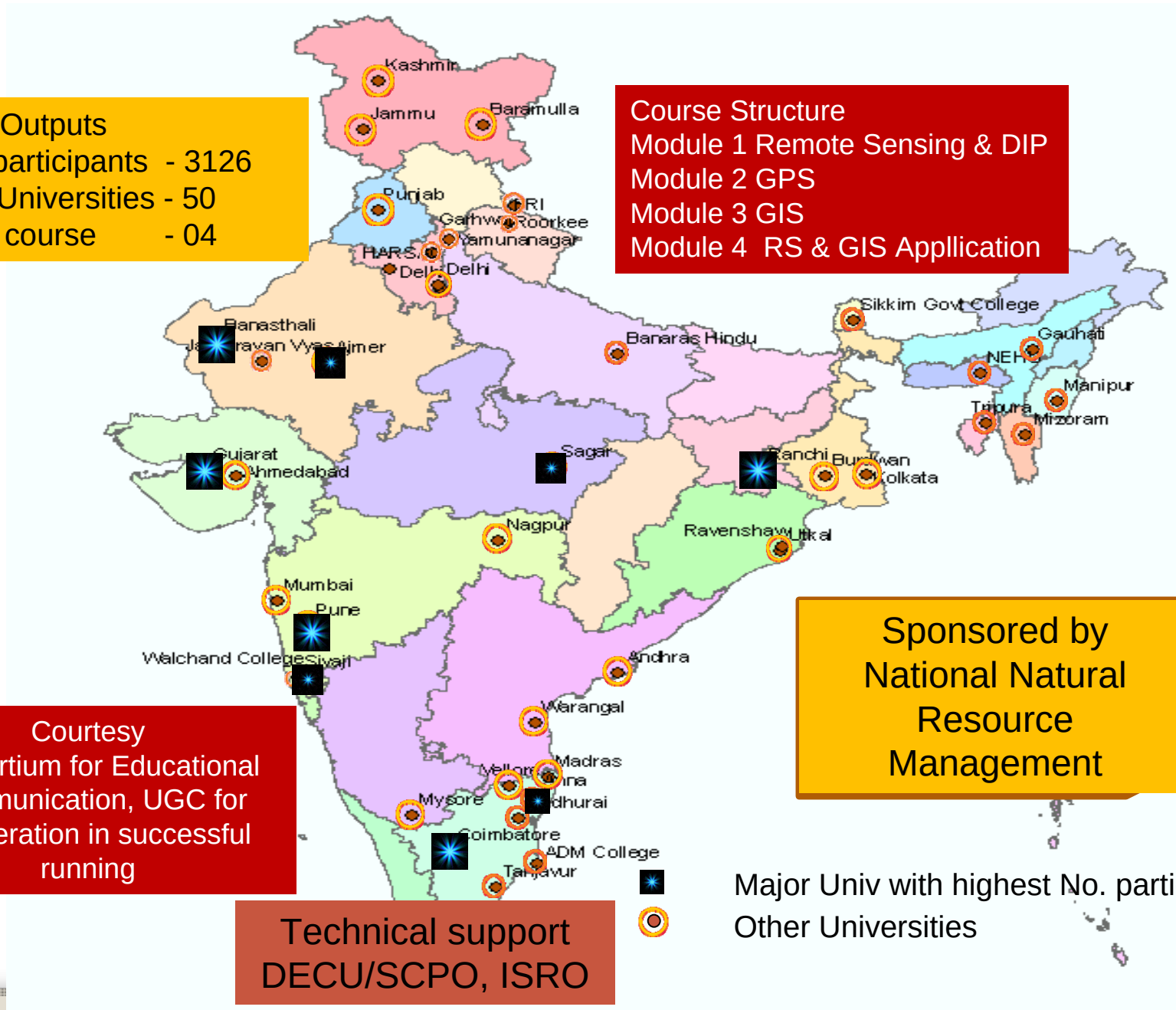
Modules:

RS & DIP – Remote Sensing & Digital Image Processing
GPS - Global Positioning System
GIS - Geographical Information System
Appl. - Applications

University list with no. of participants

Major Outputs
Total participants - 3126
No of Universities - 50
No. of course - 04

Course Structure
Module 1 Remote Sensing & DIP
Module 2 GPS
Module 3 GIS
Module 4 RS & GIS Appllication



Sponsored by National Natural Resource Management

Courtesy
Consortium for Educational Communication, UGC for Cooperation in successful running

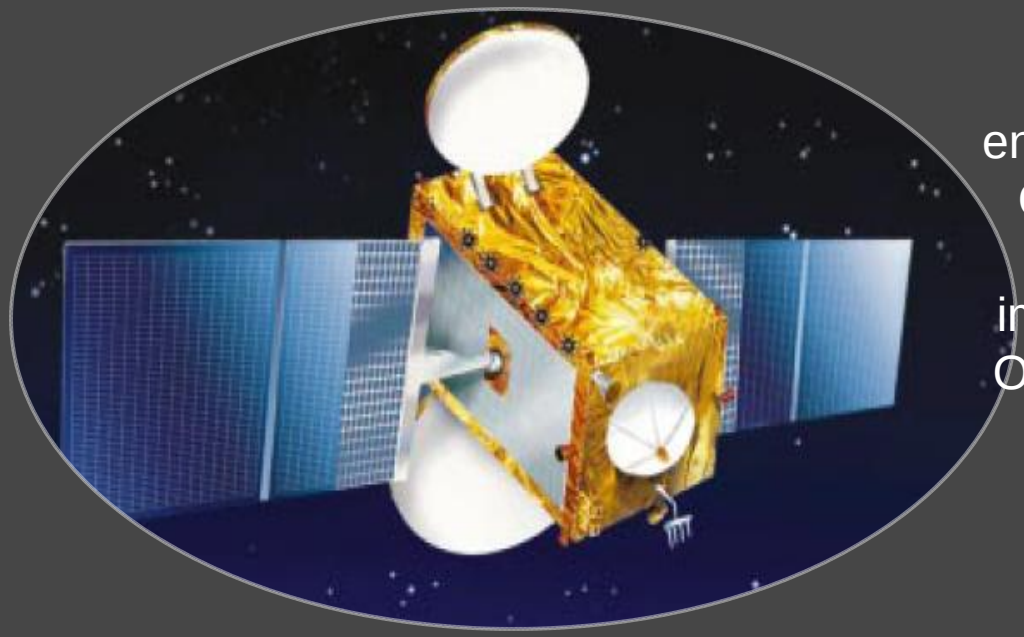
Technical support
DECU/SCPO, ISRO

Major Univ with highest No. participants
Other Universities

EDUSAT Program - Total list of participants

S. No.	Name of University	Total Students	S. No.	Name of University	Total students
1	Pune University	190	26	CEPT University	263
2	NIT, Warangal	54	27	MG Science Inst.	06
3	Anna Univ., Chennai	66	28	Gauhati Univ.	80
4	Jamia Milia Islamia	34	29	Bharathiar Univ.	11
5	Banasthali Univ.	220	30	PSG College	139
6	JNU, Delhi	116	31	Madras Univ.	44
7	Hari Singh Gour Univ.	111	32	Nagpur Univ.	47
8	Madurai Kamaraj Univ	128	33	Shivaji Univ.	102
9	Thanjavur, Tamil Univ.	17	34	JSAC	11
10	Rajiv Gandhi Univ	50	35	Jadhavpur Univ.	44
11	Kashmir Univ.	58	36	IARI Delhi	60
12	Mysore Univ.	59	37	NBPGR, Delhi	3
13	Tripura Univ.	14	38	IASRI, Delhi	1
14	BIT, Ranchi	178	39	Silchar Univ.	10
15	IIT Roorkee	12	40	ADM College	43
16	Presidency College, Kolkta	23	41	Walchand Col of Engg.	93
17	H.N.B.G.U, Srinagar	16	42	Punjub University	70
18	M.D.S. University, Ajmer	122	43	BHU, Varanasi	45
19	Baramulla University	52	44	FRI, Dehradun	56
20	Jammu University	76	45	Mizoram University	93
21	HARSAC, Hissar	37	46	Tezpur University	11
22	Gurunanak Khalsa College	02	47	Manipur University	15
23	Kurukshetra Univ.	26	48	Amrita Vishwa V Univ	33
24	GJUST	10	49	Delhi University	26
25	Gujarat University	147	50	New College Kohlapur	02

Total : 3126 No.



Workshops are conducted at the end of the program and the University Coordinators and selected student participants are invited for further improvements. Four workshops were Organized with participation of more than 100 each time

FEEDBACK ANALYSIS OF 4TH IIRS-EDUSAT PROGRAM

Prasun Kumar Gupta prasun@iirs.gov.in

EDUSAT Participant feedback analysis

- Feedback link was emailed to 663 participants.
- Coordinators were also provided the links.
- 187 responded out of (28.2%).

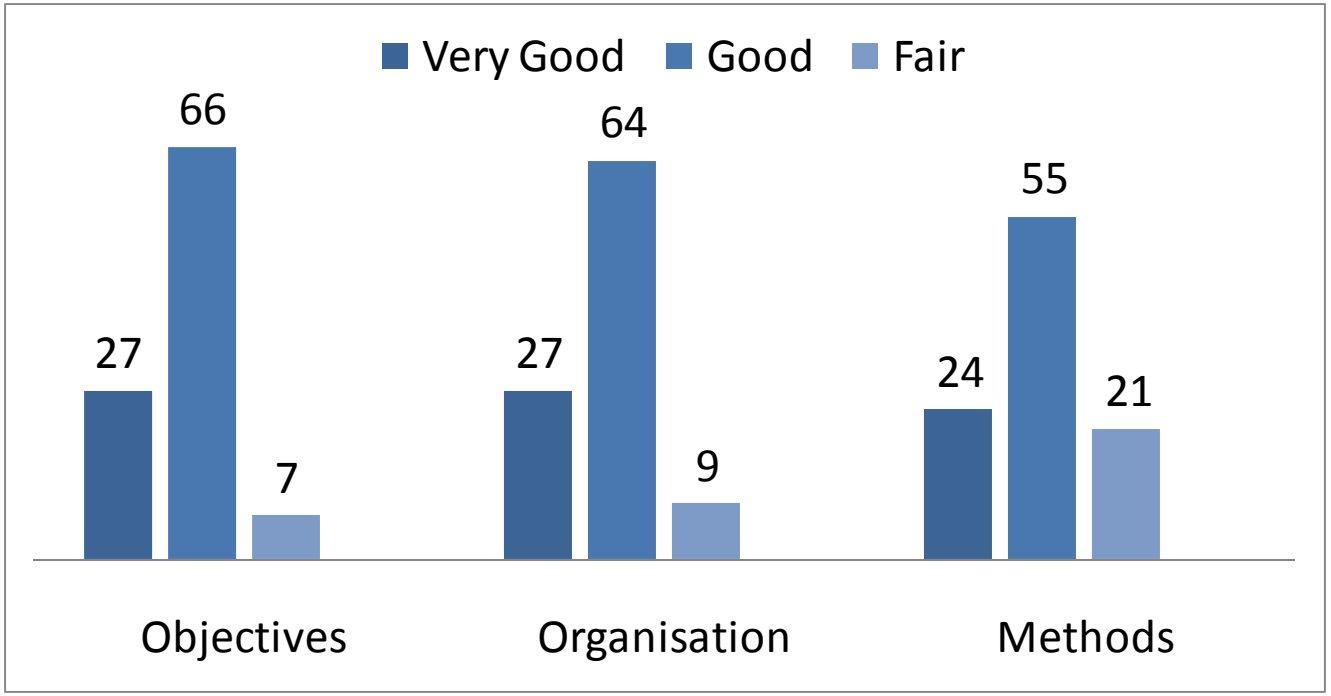
Objectives, Organisation & Methods

Trend:

Good to Average.

Noticeable:

26% found Practical Methods to be Very Effective – 62% found it to be effective



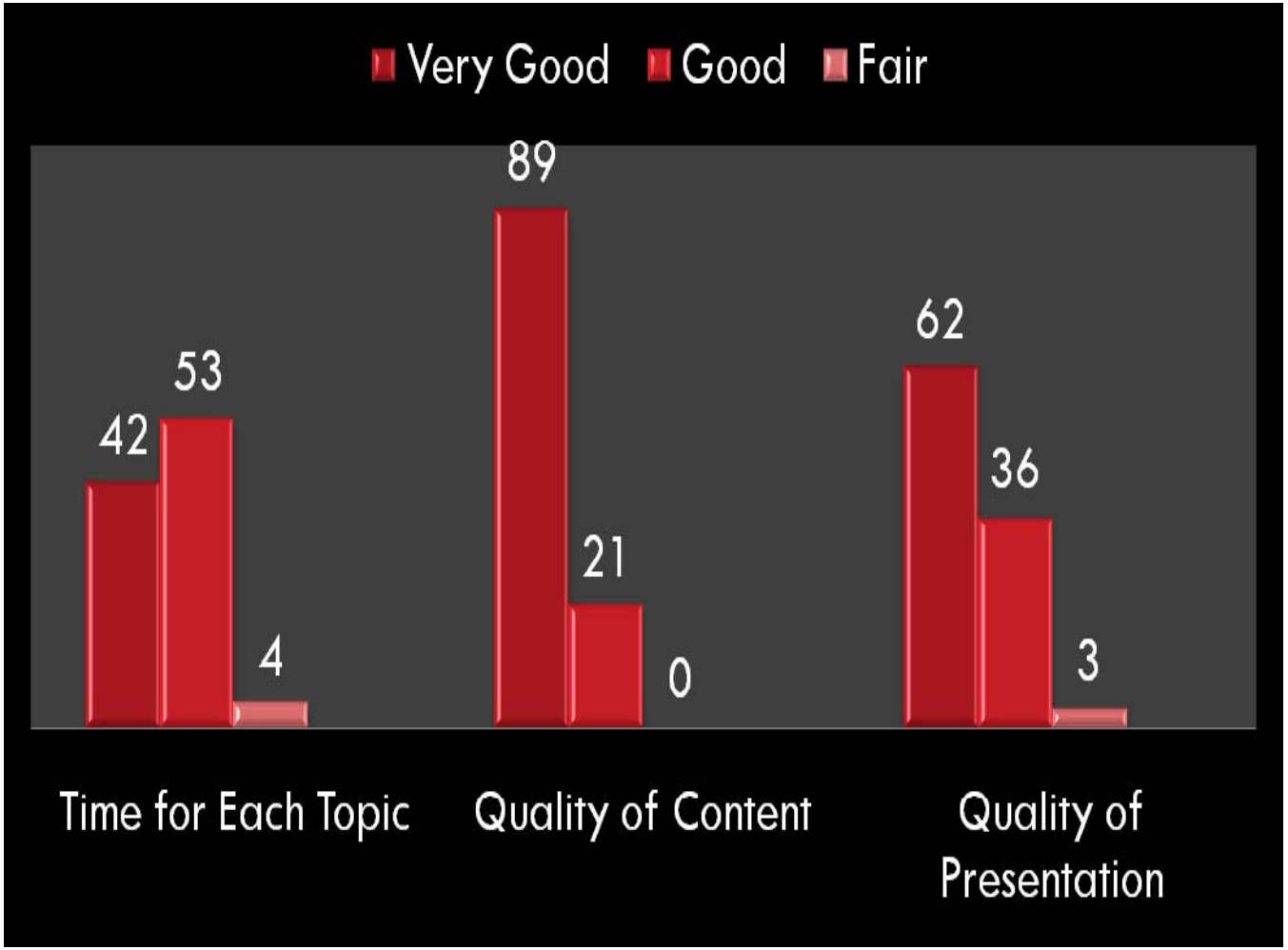
Time for each topic, Quality of Content & Quality of Presentation

Trend:

Good.

Noticeable:

Equally divided opinion on time allotted to each topic.



Strengths & Weaknesses

Strengths:

- Well designed - Good, Useful, Easy to understand
- Covers large mass, accessible even in remote areas
- Prompt response
- Strong **technical team** working in the background for hassle free relay
- Free of Cost!!

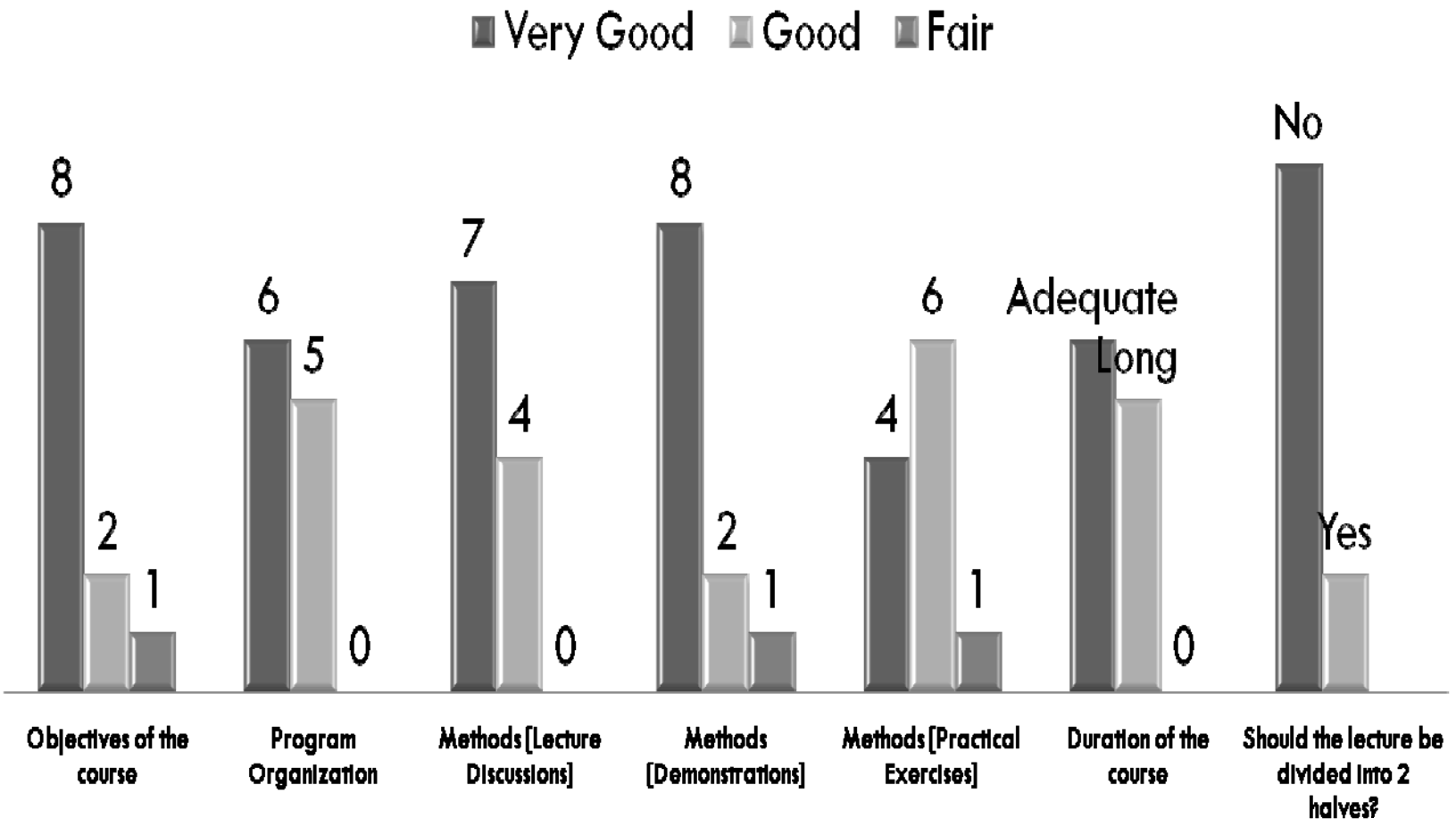
Weakness:

- Requires value addition
- Cannot concentrate on PG studies
- Update GIS Syllabus (Virtual GIS, 3D GIS etc …)
- No practical work
- Fast demonstration, unnecessary time interval between the demo & interactive session
- Fast Speech, Poor Video, low sound quality
- Changes in schedule, demo on latest s/w like Erdas, ArcGIS
- Some teachers less energetic!

Feedback by the University Coordinators

11 out of 48 participating universities replied! (22.9%)

Opinion


Very Good
Good
Fair
8
2
1
6
5
0
7
4
0
8
2
1
4
6
1
Adequate
Long
0
No
Yes
Objectives of the course
Program Organization
Methods [Lecture Discussions]
Methods [Demonstrations]
Methods [Practical Exercises]
Duration of the course
Should the lecture be divided into 2 halves?

We are listening …

Strengths:

- Enough knowledge to proceed in this field
- Holistic coverage
- Good for colleges not having experts in this field
- Expert speakers and method of delivery
- Enriched content and manpower

Weakness:

- Insufficient Practical
- Schedule modifications
- Interruptions due to technical or natural causes

Overall Feedback

- Innovative, live and interesting program
- Largely benefitted universities with limited infrastructure and faculty strength
- Comprehensive course curriculum
- Practical demonstrations are more interesting
- Special video programs on Indian Space Programs are appreciated more

Few feedback Video Clippings


University Coordinators


Students

Overall Feedback

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Few feedback Video Clippings


University Coordinators


Students

Acknowledgements

- Dr. K. Radhakrishnan, Chairman ISRO and Secretary, DOS
- Dr. G. Madhavan Nair, Former Chairman ISRO and Secretary, DOS
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- DECU, Ahmedabad,
- CEC-UGC
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Thank you all