

# Dr. Ghulam JAFFER

*Founding Head of Department- IST(former)*

Assistant Professor

Space Science Department

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## EDUCATION AND QUALIFICATIONS

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<i>Austria</i>	Ph. D.	(Electrical Engineering/ Satellite Systems Engineering)	Graz University of Technology ( <i>TU Graz</i> ), Graz	2011
	M. Sc.*	(Space Science)	Punjab University, Lahore	2001
<i>Pakistan</i>	B. Sc.	(Space Sc, Physics, Maths)	Govt FC College, Lahore	1999
	F. Sc.	(Pre Engineering)	BISE Lahore	1995
	Matric	(Science)	BISE Faisalabad	1992

## PROFESSIONAL EXPERIENCE

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<i>Mar 2015 - to-date</i>	University of the Punjab, Lahore, Pakistan
	<ul style="list-style-type: none"><li>• Head R&amp;D Cell (<i>Satellite &amp; Space Technology</i>)</li><li>• Head: Departmental Admission Committee</li><li>• In-charge: Departmental Academic and Research Labs</li><li>• Assistant Professor (<i>Space Science Department</i>)</li><li>• External and Internal Examiner/ Evaluator</li><li>• Member: Departmental Doctoral Program Committee (<i>DPCC</i>)</li><li>• Member: Departmental Board of Studies</li><li>• Member: Semester Implementation Committee</li><li>• Member: Departmental Procurement Committee</li><li>• Member: Departmental Quality Assessment Team</li><li>• Member: Scholarships Award Committee</li></ul>
<i>Jun 2012 – Mar 2015</i>	Institute of Space Technology ( <i>IST</i> ) Islamabad, Pakistan
	<ul style="list-style-type: none"><li>• Head R&amp;D Cell (<i>Space Communications</i>)</li><li>• Assistant Professor (<i>Space Science Department</i>)</li></ul>

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\* Major in Electronics, Telecommunications and Satellite Communications from Department of Space Science

- External and Internal Examiner/ Evaluator
  - Member: Departmental Board of Studies
  - Member: Departmental Quality Assessment Team
  - Member: Disciplinary Committee
- Jun 2012 – Nov 2013*
- Head of Department (Space Science)
  - Program Manager (*Departmental Quality Assessment*)
  - External and Internal Examiner/ Evaluator
  - Member: Faculty Board of Studies
  - Member: Academic Council
  - Member: Faculty Induction Committee
  - Member: Board of Research Management
  - Member: Disciplinary Committee
- Jun 2011 – Jun 2012*
- Assistant Professor (*Electrical Engineering Department*)
- GC University Lahore, Pakistan, *Telecommunication Department*
- May 2004 – Dec 2005*
- Lecturer/ Research Officer and Project Advisor:  
Electronics, Telecommunications and Satellite Communications
- Mar 2002 – Apr 2004*
- Lab Administrator: Electronics and Telecommunications Labs

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#### DOCTORAL RESEARCH SUPERVISOR: THESES SUPERVISED/ IN PROCESS

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- Feb 2012 – to-date*
- Higher Education Commission (HEC), Pakistan Approved PhD Supervisor
- Ph. D.  
*(Aug 2015 – present)*
1. RS/NH Wireless Sensor Networks
  2. RF/ FSO MIMO/ OFDM Hybrid Switchover
  3. SDR/ CR Spectrum Sensing
  4. Pakistan's Own Navigation System
- M.Phil.  
*(Aug 2015 – present)*
5. *Saba Majeed*, Cost Effective ADS-B Design Techniques using a Cubesat Constellation, *Dec. 2016*
  6. *Anwar Akhtar*, Investigation of Space-Based Lightning Sensing Techniques, *Nov. 2015*
  7. *Noreen Zafar*, Study of Lightning Sensing and Geo-Location Techniques Using LEO Nano-Satellites' Constellation, *2017*
  8. *Hafiza Saima*, Inter-Planetary Trajectory Optimisation
- M.Sc.  
*(Nov 2015 – present)*
9. *Ali Shabber Syed*, Online and Real-time Monitoring of Atmosphere/ Environment using NOAA APT and Virtual Ground Station, *Oct. 2015*
  10. *Saeed Sharif*, Feasibility Study of Transforming a Laptop into a Virtual Earth Observation Ground Station, *Oct. 2015*
  11. *Hamza*, Simulated Telemetry System for ADS-B Constellation, *2017*
  12. *Adnan Bhutta*, Design and Development of Lightning Detector onboard

PNSS1, 2017

B.S.

(Nov 2015 – present)

13. Design of PNSS LEO Constellation and Onboard Sferics Detector, 2017
14. Implementation of Virtual Ground Station on Software Defined Radio/ Open Source Software, 2017
15. Acquisition and Analysis of Amateur Satellites System using SDR, 2017

MEMBER

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*Sep 2011 – to-date*

- Higher Education Commission (HEC), Pakistan’s National Curriculum Revision Committee (NCRC) for Space Science
- HEC Pakistan’s National Curriculum Revision Committee for Physics
- Editorial Committee of the Journal of Space Technology of Institute of Space Technology (IST) Islamabad, Pakistan

*Jun 2006 – to-date*

- NASA-ESA Space Mission to Titan “CASSINI–HUYGENS” PWA/ HASI Austrian team

REVIEWER

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*Jun 2011 – to-date*

- IEEE Sensors Journal
- IEEE Aerospace and Electronic Systems Magazine
- HRPUB’s Universal Journal of Engineering Science
- IST Journal of Space Technology
- National Universities’ MS Theses

RESEARCH FELLOWSHIP/ AWARD

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*Dec 2005 – Nov 2009*

- Won fully funded Overseas Scholarship from HEC - Pakistan for Ph.D. studies at Graz University of Technology (TU Graz), Graz, Austria
- *Certificate of Accomplishment:* The first foreign LEO Satellites’s Remote Operator to accomplish all four modes (voice, data, imageries) using EXA’s Internet-to-Orbit Gateway

RESEARCH PROJECTS/ RESEARCH GRANTS

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*Austria/ Ecuador*

- APT/ HRPT from NOAAs, voice/ data transmission and reception to/ from LEO satellites using real and virtual ground station and signal/ image processing in real-time

*Pakistan*

- Design and development of time division multiplexing and de-multiplexing (TDM) system at SUPARCO, Lahore
- Design and Development of Scientific Payload onboard Pakistan National Student Satellite (PNSS) - *ongoing*
- Autonomous Remote Virtual Ground Station for Climate Research/ Validation and Scientific Outreach, (*Research Grant: University of the Punjab, 2016-2017*) – *ongoing*

- NRPU - 2017-18 (*Under Review*)

## RESEARCH INTERESTS

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- Software - Defined Radio (SDR)
- Cognitive Radio (CR)
- SDR based ADS-B & Satellite Ground Stations
- Aerospace Systems
- Energy Harvesting for Aerospace Platforms
- PNSS Space Mission
- Space Plasma Probes and Measurement Techniques
- Electrodynamic Tethers
- Spacecraft Systems Engineering
- Debris Monitoring/ Collision Avoidance
- Spectrum Monitoring System/ Spectrum Sensing
- Distributed Wireless Sensor Networks
- Innovation in Engineering Design
- Systems Engineering

## RESEARCH PUBLICATIONS

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### ***Book Chapter (Invited):***

1. **Ghulam Jaffer**, Otto Koudelka, Hans U. Eichelberger, Konrad Schwingenschuh, A LEO nano-satellite mission for the detection of lightning VHF Sferics, Adaptive Filtering Applications, ISBN 978-953-307-306-4, InTech Publishers, 2011

### ***Journal Papers:***

2. N Rubab, **G Jaffer**, Quantum Treatment of Kinetic Alfvén Waves Instability in a Dusty Plasma: Magnetized Ions, Advances in High Energy Physics, 2016
3. N Rubab, **G Jaffer**, Electromagnetic waves and instabilities in a non-degenerate quantum dusty plasma, Physics of Plasmas 23 (11), 113701, 2016
4. N Rubab, **G Jaffer**, Excitation of dust kinetic Alfvén waves by semi-relativistic ion beams, Physics of Plasmas, 23 (5), 053701, 2016
5. N. Rubab, S. Ali, **G. Jaffer**, Dust Kinetic Alfvén waves and streaming instability in a Lorentzian magnetoplasma: Perpendicular propagation, Phys. Plasmas, **21**, 063702 (2014), 2014
6. M. T. Mushtaq, M. S. Khan, S. Ehsan, M. S. Khan, **G. Jaffer**, I. Khan, S. B. Nasir, O. Koudelka, Frequency analysis and selection for cognitive radio using fuzzy logic system, Pensee Journal (ISSN: 0031-4773) Vol. 76, Issue 1, 2014
7. **Ghulam Jaffer**, Cmdr. Ronnie Nader, Prof. Otto Koudelka, Internet-to-orbit gateway and virtual ground station: A tool for space research and scientific outreach, Acta Astronautica (Elsevier), Volume 69, Issue 7, p. 658-666, 09/2011

### ***Conference Papers:***

8. N Rubab, **G Jaffer**, R Nader, MT Mushtaq, Space outreach initiatives through online & real-time space operations using virtual ground station, Aerospace Conference, 2015, IEEE
9. **G Jaffer**, N Rubab, Detection and geo-location of Sferics onboard Lightning Nano-Satellite (LiNSAT), Aerospace Conference, 2015, IEEE

10. **Ghulam Jaffer**, Ronnie Nader, Virtual ground station and NOAA: online tool for real-time monitoring of volcanic eruption, 2nd International Conference on Aerospace Science & Engineering (*ICASE*), 28 – 30 Dec 2011, Islamabad, Pakistan
11. **Ghulam Jaffer**, Otto Koudelka, Lightning detection onboard nano-satellite (LiNSAT), International Conference on Atmospheric Electricity (*ICAE*), 8 – 12 Aug 2011, Rio de Janeiro, Brazil
12. **Ghulam Jaffer**, Prof. Otto Koudelka, Automated remote ground station for Austrian lightning nanosatellite (LiNSAT), 8th IAA Symposium on Small Satellites for Earth Observation, 4 – 8 Apr 2011, Berlin, Germany
13. **Ghulam Jaffer**, Cmdr. Ronnie Nader, Prof. Otto Koudelka, Online and real-time space operations using HERMES I-2-O gateway, 1st IAA Conference On University Satellites Missions, 24 – 29 Jan 2011, Rome, Italy
14. **Ghulam Jaffer**, Cmdr. Ronnie Nader, Dr. Andrew Klesh, Prof. Otto Koudelka, Project AGORA: Simultaneously downloading a satellite signal around the world, IAC-10.B2.5.12, 61st International Astronautical Congress (*LAC*), 26 Sep – 1 Oct 2010, Prague, Czech Republic
15. **Ghulam Jaffer**, Dr. Andrew Klesh, Cmdr. Ronnie Nader, Prof. Otto Koudelka, Using a virtual ground station as a tool for supporting higher education, IAC-10.E1.4.11, 61st International Astronautical Congress (*LAC*), 26 Sep – 1 Oct 2010, Prague, Czech Republic
16. **G. Jaffer**, O. Koudelka, K. Schwingenschuh, H. Eichelberger, The detection of sferics by a nano-satellite, IAC-08.B4.2.12, 59th International Astronautical Congress (*LAC*), 29 Sep – 3 Oct 2008, Glasgow, UK

### **Technical Report:**

**Jaffer, G.** and Schwingenschuh, K, Lab experiments of corona discharges, Space Research Institute (*IWF*), Austrian Academy of Sciences (*OeAW*), Sep 2006, Graz, Austria

## ORAL AND POSTER PRESENTATIONS

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### **Oral Talks:**

17. **Ghulam Jaffer**, Internet-to-Orbit Gateway for Multi - Satellite Communications, First National Conference on Space Sciences, 8 – 9 Oct 2012, Karachi, Pakistan: (**Keynote Talk**)
18. **Ghulam Jaffer**, “Satellite-in-Classroom” Space Technology for the Education in Pakistan, National Space Conference (SUPARCO), 17 – 19 Sep 2012, Islamabad, Pakistan
19. **Ghulam Jaffer**, LEO Satellite’s Data Acquisition and Interpretation, On the Frontiers of Space Technology and Renewable Energy Sources in Pakistan, 8 Sep 2012, Islamabad, Pakistan
20. **Ghulam Jaffer**, Cmdr. Ronnie Nader, Prof. Otto Koudelka, Online and real-time space operations using HERMES I-2-O gateway, 1st IAA Conference On University Satellites Missions, 24 – 29 Jan 2011, Rome, Italy
21. **Ghulam Jaffer**, Ronnie Nader, Andrew Klesh, Otto Koudelka, Project AGORA: Simultaneously downloading a satellite signal around the world, IAC-10.B2.5.12, 61<sup>st</sup> International Astronautical Congress (*LAC*), 26 Sep – 1 Oct 2010, Prague, Czech Republic
22. **Ghulam Jaffer**, Andrew Klesh, Ronnie Nader, Otto Koudelka, Using a virtual ground station as a tool for supporting higher education, IAC-10.E1.4.11, 61<sup>st</sup> International Astronautical Congress (*LAC*), 26 Sep – 1 Oct 2010, Prague, Czech Republic
23. Ronnie Nader, Patricio Salazar, **Ghulam Jaffer**, The Ecuadorian Civilian Space Program: Near-future manned research missions in a low cost, entry level space program, IAC-10.B3.1.6, 61<sup>st</sup> International Astronautical Congress (*LAC*), 26 Sep – 1 Oct 2010, Prague, Czech Republic
24. Ronnie Nader, Hector Carrion, **Ghulam Jaffer**, HERMES Delta: The use of the DELTA operation mode of the HERMESA/ MINOTAUR Internet-to-Orbit gateway to turn a laptop in to a virtual EO ground station, IAC-10.B1.711, 61<sup>st</sup> International Astronautical Congress (*LAC*), 26 Sep – 1 Oct 2010 Prague, Czech Republic
25. **Ghulam Jaffer**, Cmdr. Ronnie Nader, Prof. Otto Koudelka, M. Tahir Mushtaq, An online and real-time virtual ground station for small satellites, UN/ Austria/ ESA Symposium on Small Satellite (Payloads) Programmes for Sustainable Development, 21 – 24 Sep 2010, Graz, Austria
26. The detection of sferics by a nano-satellite", **G. Jaffer**, O. Koudelka, K. Schwingenschuh, H. Eichelberger, IAC-08.B4.2.12, 59<sup>th</sup> International Astronautical Congress (*LAC*), 29 Sep – 3 Oct 2008, Glasgow, Scotland

27. Schwingenschuh, Konrad; **Jaffer, Ghulam**; Koudelka, O.; Khan, S.; Grant, C.; Unterberger, M.; Lichtenegger, Herbert; Macher, W.; Hausleitner, W., Feasibility study for a future Austrian lightning nano-satellite, 37<sup>th</sup> COSPAR Scientific Assembly p.2794, 13 – 20 Jul 2008, Montreal, Canada
28. Schwingenschuh, Konrad; Lichtenegger, Herbert; Simoes, Fernando; Tokano, T.; Hofe, R.; Besser, B. P.; Eichelberger, H. U.; **Jaffer, Ghulam**; Macher, W.; Jernej, I, Electric discharges in the lower atmosphere of Titan: HUYGENS acoustic and electric observations, 37<sup>th</sup> COSPAR Scientific Assembly p.2793, 13 – 20 Jul 2008, Montreal, Canada
29. **Ghulam Jaffer** and Konrad Schwingenschuh, Lab experiments of corona discharges", ISSI workshop about the PWA HUYGENS, 20 Nov 2006, Bern, Switzerland
30. **G. Jaffer**, Measurements of electromagnetic corona discharges, Lehrerfortbildung des Pädagogischen Institutes des Bundes in Steiermark: von Monden, Kometen und Planeten im Sonnen-system, Space Research Institute, Austrian Academy of Sciences, 23 Dec 2006, Graz, Austria

### **Posters:**

31. K. Schwingenschuh, T. Tokano, I. Jernej, H. U. Eichelberger, G. Prattes, B. P. Besser, V. Brown, M. Hamelin, H. T. **PWA/HASI Team\***, Electric field transients observed by the HUYGENS probe in the atmosphere of Titan: Atmospheric electricity phenomena or artefacts?, 7th International Workshop on Planetary, Solar and Heliospheric Radio Emissions (*PRE VII*), 15 – 17 Sep 2010, Graz, Austria
32. **Ghulam Jaffer**, Ronnie Nader, Otto Koudelka, Online and Real Time Monitoring of Volcanic Eruption in Ecuador Using NOAA APT, NOAA Satellite Direct Readout Conference, 4 – 8 Apr 2011, Miami, Florida, USA
33. **Jaffer, G.**, Koudelka, O., Automated Remote Ground Station For Austrian LightningNanosatellite (LiNSAT), 8<sup>th</sup> IAA Symposium on Small Satellites for Earth Observation, 4 – 8 Apr 2011, Berlin, Germany
34. H. U. Eichelberger, G. Prattes, K. Schwingenschuh, **G. Jaffer**, Ö. Aydogar, I. Jernej, B.P. Besser, M. Stachel, T. Tokano, P. Falkner, Acoustic outdoor measurements with a multi-microphone instrument for planetary atmospheres and surfaces, EGU General Assembly, 3 – 8 Apr 2011, Vienna, Austria
35. **Ghulam Jaffer**, Hans U. Eichelberger, Konrad Schwingenschuh, Otto Koudelka, A lightning detector onboard Austrian nanosatellite (*LiNSAT*), UN/ Austria/ ESA Symposium on Small Satellite (Payloads) Programmes for Sustainable Development, 21 – 24 Sep 2010, Graz, Austria
36. Eichelberger, H.-U., G. Prattes, K. Schwingenschuh, **G. Jaffer**, Ö. Aydogar, I. Jernej, B.P. Besser, M. Stachel, T. Tokano, P. Falkner, Acoustic measurements of atmospheric electrical discharges for planetary probes, EGU General Assembly, 2 – 7 May 2010, Vienna, Austria
37. **G. Jaffer**, R. Nader, O. Koudelka, NOAA/ APT satellite data for online and real time monitoring of Tungurahua volcanic eruption and temperature profile in Ecuador, American Geophysical Union (*AGU*) Fall meeting 2010, 13 – 17 Dec 2010, San Francisco, California, USA
38. **Ghulam Jaffer**, Hans U. Eichelberger, Konrad Schwingenschuh, Otto Koudelka, Lightning detector onboard Austrian nanosatellite (*LiNSAT*), American Geophysical Union (*AGU*) Fall meeting 2010, 13 – 17 Dec 2010, San Francisco, California, USA
39. K. Schwingenschuh, B.P. Besser, R. Hofe, T. Tokano, J.J. Lopez-Moreno, R. Grard, P. Falkner, R. Trautner, M. Hamelin, F. Simoes, I. Jernej, **G. Jaffer**, G.J. Molina-Cuberos, M. Fulchignoni, F. Ferri, HUYGENS in-situ observations of Titan's atmospheric electricity, European Geophysical Union (*EGU*) General Assembly, 15 – 20 Apr 2007, Vienna, Austria
40. K. Schwingenschuh, R. Hofe, T. Tokano, J.J. Lopez-Moreno, R. Grard, P. Falkner, R. Trautner, M. Hamelin, F. Simoes, I. Jernej, **G. Jaffer**, G.J. Molina-Cuberos, M. Fulchignoni, F. Ferri, In-situ observations of electric field fluctuations and impulsive events during the descent of the HUYGENS probe in the atmosphere of Titan, European Planetary Science Congress (*p.690*), 18 – 22 Sep 2006, Berlin, Germany
41. Schwingenschuh, K.; Hofe, R.; Tokano, T.; Lopez-Moreno, J. J.; Grard, R.; Falkner, P.; Trautner, R.; Hamelin, M.; Simoes, F.; Jernej, I.; **PWA/ HASI Team\***, Electric field observations during the descent of the HUYGENS probe: evidence of lightning in the atmosphere of Titan, 36<sup>th</sup> COSPAR Scientific Assembly, 16 – 23 Jul 2006, Beijing, China

### RESEARCH WORK 'IN PROGRESS'

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### **Accepted:**

42. **Ghulam Jaffer**, Autonomous Remote Ground Station for LEO Satellites, IEEE Aerospace Conference 2016, Big Sky,

Montana, USA

43. **Ghulam Jaffer**, Internet-to-orbit gateway as online tool for real-time monitoring of natural disasters, IEEE Aerospace Conference 2016, Big Sky, Montana, USA
44. Salman Mahmood, Muhammad Tahir Mushtaq, **Ghulam Jaffer**, Cost Efficient Design Approach for Receiving the NOAA Weather Satellites Data, IEEE Aerospace Conference 2016, Big Sky, Montana, USA

***Under Review:***

45. **Ghulam Jaffer**, Cmdr. Ronnie Nader, Nazish Rubab, Tahir Mushtaq, Online and real-time space operations using HERMES I-2-O gateway
46. **Ghulam Jaffer**, Ronnie Nader, Nazish Rubab, Technical capabilities of online ground station for multi-satellite communications

***Submitted:***

47. **Ghulam Jaffer**, Autonomous Remote Virtual Ground Station for Climate Research/ Validation and Scientific Outreach, (*Research Proposal*)

***Under Preparation:***

48. Muhammad Tahir Mushtaq, Muhammad Saleem Khan, Muhammad Saeed Khan, Inayat Khan, **Ghulam Jaffer**, Otto Koudelka, An overview of spectrum sensing techniques in cognitive radios
49. **Ghulam Jaffer**, LEO satellites' tracking and real-time data/ voice acquisition using four modes of space operations
50. **Ghulam Jaffer**, Enhanced technical training of online space operations for future ground station operators
51. **Ghulam Jaffer**, Hans U. Eichelberger, Radio frequency measurements of atmospheric electrical discharges for LiNSAT scientific payload

**CONFERENCES/ WORKSHOPS/ SYMPOSIA ATTENDED**

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1. ISNET-SUPARCO International Conference/ Workshop on Student Satellite 2 – 6 Nov 2015, Lahore, Pakistan
2. Seminar on Pakistan National Student Satellite-1 (*PNSS-1*) 12 – 13 Feb 2014, Islamabad, Pakistan
3. 3<sup>rd</sup> International Conference on Aerospace Science & Engineering (*ICASE*), 21 – 23 Aug 2013, Islamabad, Pakistan
4. First National Conference on Space Sciences, 8 – 9 Oct 2012, Karachi, Pakistan
5. National Space Conference (*SUPARCO*), 17 – 19 Sep 2012, Islamabad, Pakistan
6. Workshop on the Frontiers of Space Technology and Renewable Energy Sources in Pakistan, Sep 8, 2012, Islamabad, Pakistan
7. Workshop on the Frontiers of Physics and Space Technology, 31 Aug – 1 Sep 2012, Islamabad, Pakistan
8. 2<sup>nd</sup> International Conference on Aerospace Science & Engineering (*ICASE*), 28 – 30 Dec 2011, Islamabad, Pakistan
9. National Youth Forum on Empowering Youth with Earth Observation Information for Climate Actions Workshop, International Centre for Integrated Mountain Development (*ICIMOD*), 7 – 10 Dec 2011, Islamabad, Pakistan
10. 8<sup>th</sup> IAA Symposium on Small Satellites for Earth Observation, 4 – 8 Apr 2011, Berlin, Germany
11. 1<sup>st</sup> IAA Conference On University Satellites Missions, 24 – 29 Jan 2011, Rome, Italy
12. 6<sup>1st</sup> International Astronautical Congress (*LAC*), 26 Sep – 1 Oct 2010, Prague, Czech Republic
13. United Nations Office for Outer Space Affairs (*UNOOSA*)/ *ESA*/ *Austria* Symposia, Sep – 2010, 2009, 2008, 2007, 2006, Graz, Austria
14. 59<sup>th</sup> International Astronautical Congress (*LAC*), 29 Sep – 3 Oct 2008, Glasgow, UK

15. 37<sup>th</sup> COSPAR Scientific Assembly, 13 – 20 Jul 2008, Montreal, Canada
16. International Workshop on Satellite and Space Communications (*IWSSC'07*), 13 – 14 Sep 2007, Salzburg, Austria
17. European Geophysical Union (*EGU*) Conference, 15 – 20 Apr 2007, Vienna, Austria
18. Graz in Space (*Summer University*) 7 Sep 2006, Graz, Austria
19. Provincial Workshop on Environment Awareness, 31 May – 2 Jun 2000, Lahore, Pakistan

#### ONFERENCES/ WORKSHOPS/ SYMPOSIA ORGANIZED

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1. 3<sup>rd</sup> International Conference on Aerospace Science & Engineering (ICASE), 21 – 23 Aug 2013, Islamabad, Pakistan
2. World Space Week (WSW-2013), Multiple Events, 4 – 6 Oct 2013, Islamabad, Pakistan
3. World Space Week (WSW-2012), Multiple Events, 4 – 6 Oct 2012, Islamabad, Pakistan
4. Workshop on the Frontiers of Space Technology and Renewable Energy Sources in Pakistan, 8 Sep 2012, Islamabad, Pakistan
5. Workshop on the Frontiers of Physics and Space Technology, 31 Aug – 1 Sep 2012, Islamabad, Pakistan
6. 2nd International Conference on Aerospace Science & Engineering (ICASE), 28 – 30 Dec 2011, Islamabad, Pakistan

#### PROFESSIONAL TRAININGS

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*Austria/ Ecuador*

- Satellite Ground Station operations on HERMES-A/ Minotaur: the first internet- to-orbit gateway in S-America, EXA–Ecuador, Sep 2009 – to-date

*Pakistan*

- National Youth Forum: Empowering Youth with Earth Observation Information for Climate Actions, International Centre for Integrated Mountain Development (ICIMOD), Dec 2011
- Telecom technology, at M.U.E.T. Jamshoro Sindh, 13 – 14 Feb 2004
- PLC and electrical equipment, at G.T.T.T.C. Faisalabad, 28 – 31 Oct 2002
- Router / WAN (*Associate*), at Corvit Systems Lahore, 12 Jul – 20 Sep 2002
- MCSE 2000 / LAN, at Corvit Systems Lahore, 12 Jul – 28 Nov 2002
- Telecom instrumentation, at SUPARCO Lahore, Sep 2000 – Dec 2001

#### COMPUTING SKILLS

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- Satellite Toolkit (*STK*)
- Matlab/ Simulink
- LabView
- Software Suite (*HRD, MixW, WXtoImg*) for Virtual GS
- MS- Word, Excel and Power Point
- OS: WINDOWS- 9X, Professional, XP, Vista, 7, 8 and 10

#### RESEARCH AREAS/ SUBJECTS OF INTEREST/ TAUGHT COURSES

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- Electronic Circuits Theory
- Analog Electronics
- Digital Electronics

- Electronic Devices and Circuits
- Electronic Communication
- Electronic Communication Systems
- Satellite Communications
- Spacecraft Systems Engineering
- Space Mission Analysis and Design/ Satellite Payload Design
- Astrodynamics/ Space-Flight Dynamics/ Orbital Mechanics
- Navigation and Space Instrumentation
- Satellite Ground Stations: Satellite Command, Control, Monitoring, Tracking & Operations
- System Engineering in Aerospace
- Software Defined Radio
- Telecommunications
- Communication Networks
- Space Environment/ Space Science/ Space Technology
- Lightning Electromagnetics
- Research Methodology

## PROFESSIONAL RESPONSIBILITIES

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Academic/ Teaching	<ul style="list-style-type: none"> <li>• Teaching <i>UG and PG</i> courses (<i>mentioned above</i>) ensuring full utilization of the Academic Management Software</li> <li>• Administrated Analog and Digital Electronics Research Lab</li> <li>• Conducted Labs of Circuit Analysis, Electronics, Digital Logic Design &amp; Applied Physics, to M.Sc. Telecommunications &amp; PGD Communications Technology</li> <li>• Project Advisor: Supervising various final year projects relating Telecommunication Systems and Global Positioning System (GPS)</li> </ul>
Academic/ Technical Management	<ul style="list-style-type: none"> <li>• Active member of CASP research team through well honed experimental work in Optical Communications, Telecommunication Systems, Antenna Theory and Design, Cellular Communications, Microstrip Technology, and Microwave Communication.</li> <li>• Initiation, development and support for experimental and development activities with well honed projects of M.Sc. telecommunications</li> <li>• Participated in developing Intranet</li> <li>• Initiated ACRs/OERs/GSFs of all teaching staff of the department being Head of Department</li> <li>• Established a new department (<i>Space Science</i>) from scratch</li> </ul>
Curriculum Development/ Assessment	<ul style="list-style-type: none"> <li>• Initiated UG and PG Programs namely BS Space Science and MS Remote Sensing and Geographic Information Science (<i>RS&amp;GISc</i>) successfully</li> <li>• Developed curricula of BS and MS programs in the newly developed Space Science Department</li> <li>• Reviewed and amended courses to bring them at par with international standards</li> <li>• Participated in the curriculum development at national level through Higher Education Commission (<i>HEC</i>) as member of National Curriculum Review Committee (<i>NCRC</i>)</li> </ul>
Departmental Projects	<ul style="list-style-type: none"> <li>• Assessed/ evaluated and supervised BS, MS, PhD students in carrying out their semester/ final year projects (<i>prototype development</i>)/ theses/ dissertation</li> <li>• Provided conducive environment to carry out Faculty Projects</li> </ul>
Research and Development (R&D)	<ul style="list-style-type: none"> <li>• Assigned and oversee R&amp;D project work undertaken by the department</li> <li>• Made proposals for improvement and maintenance of facilities such as laboratories, libraries, teaching aids in the department</li> <li>• Participated/ organized (manage technical sessions) and present paper at International Conference of Aerospace Engineering (<i>ICASE 2011</i>) and ICASE-2013</li> </ul>

University- Industry Linkages	<ul style="list-style-type: none"> <li>• Participated in the development and enhancement of i-Cube ground station capabilities as remote and virtual ground station for remote operations</li> <li>• To strengthen university-industry linkages, involved in collaboration processes between IST and other national &amp; international organizations by signing MoU with National Centre for Physics (NCP), Islamabad and Pakistan Meteorological Department (PMD), Islamabad, Pakistan</li> <li>• Working on MoU with University of the Punjab - Ecuadorian Space Agency (EXA), Ecuador</li> </ul>
HR Management	<ul style="list-style-type: none"> <li>• Interviewed candidates for Faculty Development Program and Job(s) at IST for the Space Science and other Departments</li> </ul>
Budget Planning/ Procurement	<ul style="list-style-type: none"> <li>• Prepared budget proposals in respect of the departmental development</li> <li>• Finalized plans and labs requirement for the Space Science Department</li> <li>• Attended all meetings for the procurement of Lab Equipments</li> </ul>
Quality Enhancement	<ul style="list-style-type: none"> <li>• Assessed the MS and BS programs at National Centre for Remote Sensing &amp; Geographic Information System (NCRG-RS&amp;GIS)-SUPARCO-IST and gave recommendations for improvement being Program Manager of the BS Space Science Program and member of Quality Enhancement Cell</li> <li>• Monitoring the evolutionary process by follow-up meetings with Head of the centre and QEC Department the University of the Punjab</li> </ul>
Policies Implementation	<ul style="list-style-type: none"> <li>• Presided over the Departmental Board of Studies (DBS) meetings for finalizing semester results and consider the disposal of academically deficient students for making recommendations to the Faculty Board of Studies (FBS), Academic Council and Syndicate meetings</li> <li>• Attended all Faculty Board of Studies (FBS) and Academic Council meetings so that all provisions be implemented in IST</li> <li>• Presided over the Departmental Admission Committee meetings to finalize admissions (BS, MSc, MPhil and PhD) at the Space Science Department of the University of the Punjab</li> <li>• Attended all meetings related to semester implementation, disciplinary, examination/ results and scholarship award to scrutinize candidates in respective domains.</li> </ul>