

# CURRICULUM VITAE

## Virgilio Gonzalez

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## EDUCATION

- **Ph.D. - Computer Engineering:** University of Texas at El Paso, (May 1999), El Paso, TX, USA, Advisor: *Mehdi Shadaram*. Dissertation: "*Performance Analysis of a Local Area Network Based on WDM and ATM*".
- **MS - Manufacturing Systems, Specialty in Automation:** Instituto Tecnológico y de Estudios Superiores de Monterrey, (Dec 1991), Edo.Mex. MEX.
- **BS - Electronics and Communications Engineering:** Instituto Tecnológico y de Estudios Superiores de Monterrey, (Dec 1988), Edo.Mex. MEX. (*Honors*)

## AWARDS

- **Regents' Outstanding Teaching Award**, University of Texas System, September 2012
- **Woody Everett Award**, American Society of Engineering Education – Computers in Education division, June 2011
- **ECE Service Award for support to students**, UTEP – ECE department, 2010
- **Who is Who among America's Teachers**, Educational Communications Inc., 2005, 2006 and 2007.

## PROFESSIONAL EXPERIENCE

### University of Texas at El Paso, El Paso, TX, USA

- Clinical Associate Professor (September 2013-present)
- ECE Associate Chair (August 2011-present)
- ECE Undergraduate Program Director (Jan 2008 - August 2011)
- Senior Lecturer (Jun 2009 – August 2013)
- Assistant Professor (Sep 2003 – May 2009)
- Visiting Assistant Professor (Sep 2001 – Aug 2003)
  - Faculty member of the Electrical and Computer Engineering Department. Specialty in communications.
  - ABET coordinator.
  - Taught and updated courses such as: *Digital systems design I*, *Data communications*, *Fiber optic communications*, and *Signals & systems*
  - Created courses: *Intro to communication networks*, *Wireless networks for biomedical applications*, and *Communications simulations*.
  - Winner of the UT-System Regents Teaching Award.

### AT&T – Alestra, Monterrey, NL, MEXICO

- Technology Planning Manager (Aug 1996 – Aug 2001)

- Chief Network Architect in charge of technology development projects for several areas in AT&T Mexican Carrier Network July 1996 - August 2001
- Coordinated Year 2000 technology upgrade to avoid service interruption.
- Responsible of deploying technology for services: Virtual Private Networks (VPNs) using MPLS, Internet service for dedicated and dial-up access, ATM / Frame Relay, Dedicated access via Radio links and fiber optics, Integrated Services Digital Network (ISDN), SS7 advanced Intelligent Network,
- Development, construction and startup operation of the AT&T's Mexican Carrier National Network.

**Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey, N.L. and Edo. Mex. (MEXICO)**

- Lecturer (Intermittently between Sep 1990 and May 2001)
  - Part-time professor of communications technologies for graduate and undergraduate courses.

**University of Texas at El Paso, El Paso, TX, USA**

- Research Assistant (Jan 1994 – Jun 1996)

**Instituto Tecnológico y de Estudios Superiores de Monterrey, Edo. Mex. MEXICO**

- Telecommunications Director, (Jan 1989 – Aug 1993)
  - Planning and design of the ITESM's digital communications network
  - Development of the control and monitoring system of the ITESM's satellite network.
  - Inclusion of digital compressed video to the satellite classes for distance learning at the ITESM in 1992.
  - Installation and configuration of an IBM es/9000-500 supercomputer for ITESM campus Estado de México. Also Unix workstations NEXT, RS-6000, HP9000 and SUN/sparcstations.
  - Connection of the first link from Mexico city to Internet in 1989
  - Installations of third and fourth stages of ITESM's satellite network.

**SEDENA (Mexican Army), Mexico, D.F, MEXICO**

- Consultant for Satellite Network Project, (Aug 1989 – Aug 1992).

**GRANTS, CONTRACTS AND GIFTS**

- PI "Evaluation of the Behavior of Optical Fibers for Structural Health Monitoring of Composite Pressure Vessels", \$300,000, NASA-NSTI, September 2011 – August 2014.
- Co-PI "Building Expertise on Energy Sustainability (BEES) - An Integrative Model to Increase Research and Education in Renewable Energy Systems", \$290,000, USDA, Aug 2010 – Aug 2014
- PI "Avionic Interfaces for Systems Engineers", \$70,000, Lockheed, May – Sep 2010.
- Co-PI "MRI: Acquisition of the Cyber-ShARE Collaborative Visualization System", \$699,671, National Science Foundation, September 2009 – August 2012.
- PI "Radio Link Analysis", \$49,500, Lockheed, February – May 2009.
- Co-PI "ICS subsystem", \$10,000, Lockheed, Fall 2008.
- PI, "BME Radio Communication Lab," \$20,000, UTEP Biomedical engineering STARS Fund, March 2008 – August 2009.
- Fellow, "Breaking Barriers in Communication: Technology-Enabled Active Learning in STEM Disciplines", \$1,600, UCSD, July 2008 – July 2009.
- Co-PI, "Launching a Sensor Networks Research and Student Development Program for Electrical and Computer Engineering Students," \$891,713, Department of Defense, September 1, 2006 – August 30, 2009.

- PI, "Distribution of RF signals via WDM networks," \$89,000, Office of Naval Research, Sep 1, 2003 – Jun 30, 2006.
- Fellow, "URI: Development of a high performance network using WDM and Optical CDMA by optimization of switching protocols", \$4,708, UTEP, March 2004 – August 2005.
- Fellow, "Remote Access to Complex Electrical Engineering Simulation Environments", \$2,000, UTEP-DMC, Summer 2003.
- Co-PI, "Development of Simulation Laboratory for Communication Systems," \$99,800, Lucent Technologies, February 1, 2001 - January 31, 2003.

## **PUBLICATIONS AND CONFERENCES**

### **Peer Reviewed Journals and Conference Proceedings**

- Gonzalez, V. E., & Perez, O. A., "Work-in-Progress: Student Dashboard for a Multi-agent Approach for Academic Advising", Transactions on Techniques in STEM Education, NCEE, vol 1, pp. 2-14, 2015
- Gonzalez, V. E., & Perez, O. A. (2015, June), Work-in-Progress: Student Dashboard for a Multi-agent Approach for Academic Advising Paper presented at 2015 ASEE Annual Conference and Exposition, Seattle, Washington. 10.18260/p.25109
- Perez, O. A., Gonzalez, V., Golding, P., Pitcher, M. T., Gomez, H., Espinoza, P., Hemmitt, H., Anaya, R. H., (2014). A Three Year Longitudinal Study of Mobile Technology and Analysis of the Impact on a STEM-Based Course. ASEE Computers in Education Journal, 5(1), 85-94
- Quintana, J. and **Gonzalez, V.**, "Detection and calculation of reflected spectral shifts in fiber-Bragg gratings (FBG) in polarization maintaining optical fiber," in Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2014, March 10, 2014 - March 13, 2014, San Diego, CA, United states, 2014, pp. American Society of Mechanical Engineers; The Society of Photo-Optical Instrumentation Engineers (SPIE).
- Quintana, J., Rumpf, R., and **Gonzalez, V.**, "Modified transfer matrix method model for a fiber Bragg grating strain sensor in polarization maintaining single mode optical fiber," in Integrated Optics: Devices, Materials, and Technologies XVIII. San Francisco, CA, USA, 20140203, Place of Publication: San Francisco, CA, USA. Country of Publication: USA., 2014, p. (8 pp.).
- Perez, O. A., Pitcher, M. T., Espinoza, P. A., Gomez, H., Gonzalez, V., Hemmitt, H., . . . Golding, P. (2013). A three year longitudinal study of mobile technology and analysis of the impact on STEM-based courses. Paper presented at the 120th ASEE Annual Conference and Exposition, June 23, 2013 - June 26, 2013, Atlanta, GA, United states.
- Perez, O. A., **Gonzalez, V.**, Pitcher, M. T., Golding, P., Gomez, H., & Espinoza, P. A. (2012). Analysis of mobile technology impact on STEM based courses; specifically introduction to engineering in the era of the iPad. Paper presented at the 119th ASEE Annual Conference and Exposition, June 10, 2012 - June 13, 2012, San Antonio, TX, United states.
- Garcia, C.R., Correa, J., Espalin, D., Barton, J.H., Rumpf, R.C., Wicker, R., and **Gonzalez, V.**: '3D printing of anisotropic metamaterials', Progress in Electromagnetics Research Letters, 2012, 34, pp. 75-82
- Perez, O.; **Gonzalez, V.**; Pitcher, M. ; Golding, P., "Work in progress: Analysis of mobile technology impact on STEM based courses; Specifically introduction to engineering in the era of the iPad" ASEE Annual Conference and Exposition, Conference Proceedings, 2011, 118th ASEE Annual Conference and Exposition
- Virani, S., Burnham, I. B., **Gonzalez, V.**, Barua, M., Fredericksen, E. and Andrade, S. J. "Work in progress: Designing an innovative curriculum for engineering in high school (ICE-HS)". American Society for Engineering Education, Vancouver, 2011
- **Gonzalez, V.** and Esparza, D., "Work in progress - Advising tool to improve the time for graduation and the transfer of students from a community college to engineering school," in 40th Annual Frontiers in Education Conference: Celebrating Forty Years of Innovation, FIE 2010, October 27, 2010 - October 30, 2010, Arlington, VA, United states, 2010, pp. T3H1-T3H2.

- **Gonzalez, V.** and Freudenthal, E., "SDIm an introductory programming course with an ECE context," in 40th Annual Frontiers in Education Conference: Celebrating Forty Years of Innovation, FIE 2010, October 27, 2010 - October 30, 2010, Arlington, VA, United states, 2010, pp. S2F1-S2F2.
- Musa, A., Al-Dmour, A., Fraij, F., **Gonzalez, V.**, & Al-Hashemi, R., "Developing a virtual laboratory for a communication and computer networking course," International Journal of Continuing Engineering Education and Life-Long Learning, vol. 20, pp. 390-406, 2010.
- **Gonzalez, V.** and Freudenthal, E., "Work in progress: Adoption of CCSO computational methods and circuit analysis techniques into an introductory programming course for electrical engineers," in 2010 ASEE Annual Conference and Exposition, June 20, 2010 - June 23, 2010, Louisville, KY, United states, 2010.
- **Gonzalez, V.**; Freudenthal, E; Nazeran, H.; "Work in progress: Wireless biomedical data collection, a laboratory to prepare students into emerging engineering areas", ASEE 2009 Annual Conference, Austin TX, June 2009.
- Korada, R.; **Gonzalez, V.**; "Finding the Trajectory Path of a Wireless Device in WLAN", ELECTRO 2008, Chihuahahua Mexico, October 2008.
- **Gonzalez, V.** "Development of an Ad-Hoc Curriculum Advising Tool to Improve Student Progress Using CPM and PERT Analysis", ASEE 2008 Annual Conference, Pittsburgh PA, June 2008.
- D. E. Barragan and **V. Gonzalez**, "Towards an optimal placement of sensors in wireless sensor networks with dynamic routing," in 2008 Annual Meeting of the North American Fuzzy Information Processing Society, NAFIPS 2008, May 19, 2008 - May 22, 2008, New York City, NY, United states, 2008.
- Medrano, J.; **Gonzalez, V.**; Musa, A.; et al.. "Architecture of a Dual Stage Optical Label Switch Using Out-of-Band Wavelength and Code Optical Properties." Journal on Selected Topics on Quantum Electronics. Vol 13, Issue 5, pp. 1568-1578, 2007.
- Shadaram, M.; Musa, A.; **Gonzalez, V.**, et al., "Routing algorithm using the flooding mechanism in a hybrid optical-CDMA and WDM all-optical network," Optical Fiber Technology, vol. 13, pp. 149-155, 2007.
- Shadaram, M.; Cota, P.; Musa, A.; **Gonzalez, V.**; et al., "Efficient Routing for Hybrid Optical-CDMA and WDM All-Optical Networks", IEEE MILCOM 2006, Washington, D.C. , October 2006.
- Thomas, C.; Musa, A.; **Gonzalez, V.**, et al., "Analysis of Phase noise of RF signals in Analog Fiber Optic Systems," 2006 IEEE Sarnoff Symposium, Princeton, New Jersey, USA, 2006.
- **Gonzalez, V.**; Musa, A. and Shadaram, M. "Development of a Communications Course Integrating a Virtual Laboratory and Complex Simulations", ASEE 2005 Annual Conference, Portland OR, June 2005.
- Nazeran, H.; Setty, S.; Haltiwanger, E.; **Gonzalez, V.** "A PDA-based Flexible Telecommunication System for Telemedicine Applications", Proceedings 26<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology, Vol 26 III pp 2200-2203, San Francisco California, Sep 2004.
- Musa, A.; Medrano, J.; **Gonzalez, V.**; et al., "Circuit Selection in a Hybrid Optical-CDMA and WDM All-Optical Network", Proceedings SCI-2004, Vol XII pp 253-258, Orlando Florida, Jul 2004
- **Gonzalez, V.** and Shadaram, M. "Performance Evaluation of a High-Speed WDM/ATM Optical Fiber Local Area Network," Optical Engineering, Vol. 38, (November 1999), 1853-1861.
- Shadaram, M., Bullock, P. and **Gonzalez, V.**, "Monitoring Fiber Optic Sensor Array by Analyzing the Complex Envelope of Probe Signal" Optical Society of America, Annual Meeting. Paper no. WMM3, Portland Oregon, September 1995.

#### Contributions to Books and Collections

- Musa, A.; Medrano, J.; **Gonzalez, V.**; Shadaram, M. "Circuit Establishment in an All-Optical Backbone Network", chapter in Annual Review of Communications, Vol. 58, International Engineering Consortium , November 2005
- Medrano, J.; Musa, A.; **Gonzalez, V.**; Shadaram, M. "High-Capacity All-Optical Networks", chapter in Annual Review of Communications, Vol. 57, International Engineering Consortium, November 2004

- Shadaram, M. and **Gonzalez, V.** "Optical Fiber Local Area Networks", a chapter in the Encyclopedia of Telecommunications, Edited by John G. Proakis, John Wiley & Sons, December 2002.

### Conference Presentations

- Sosa, A.; **Gonzalez, V.** "Personnel tracking system using a Bluetooth based epidemic protocol", 24th Southern Biomedical Engineering Conference, El Paso, TX, April 2008
- Freudenthal, E.; **Gonzalez, V.** "An anti-entropy protocol suitable for managing data deletion in an epidemic data transmission system", 24th Southern Biomedical Engineering Conference, El Paso, TX, April 2008
- **Gonzalez, V.**; Kosheleva, O. "Successful Collaboration between Engineering and Education Leads to Creation of a Mobile Learning Environment Based on Tablet PCs", SITE 2006 International Conference, Orlando FL, March 2006.
- Medrano, J.; Musa, A.; **Gonzalez, V.**; et al.. "A Dual Stage Optical Label Switch Architecture to Create an All-Optical Network Based on WDM and Optical CDMA," 2006 IEEE Region 5 Conference, San Antonio TX, 2006.
- **Gonzalez, V.**; Kosheleva, O. "Creation and Application of Mobile Computer Classrooms for Teaching and Assessment", presented at SUN Conference, El Paso, TX, USA, March 2005
- **Gonzalez, V.**, Moya, J., Munter, J. et al., "Cooperative Learning and Mobile Classrooms: Collaboration and Course Re-Design", presented at SUN Conference, El Paso, TX, USA, March 2004
- Musa, A.; **Gonzalez, V.**; Shadaram, M., " Development of an Undergraduate Communications Simulation Laboratory ", ASEE-GSW2004 conference, Paper 067, ,Lubbock Texas, March 2004
- **Gonzalez, V.**, Moya, J., Munter, J. et al., "Engineering Gatekeeper Course Re-Design: Impact of the revision of Engineering/Computer Science coursework at a Minority Institution", FIE Conference HP sponsored seminar, Westminster CO, USA, November 2003
- **Gonzalez, V.** "¿Matara el Internet a las centrales telefónicas?" presented at COMDEX Norte 97, Monterrey, MEXICO, October 1997

### Technical Reports

- Esparza, E., Santacruz, G., Gonzalez, V., Pineda, R. "LMC / Aero, Avionic interfaces for Systems Engineers", Lockheed Martin, El Paso, TX, 2010
- Quintana, J., Jaber, M., Gonzalez, V., Pineda, R., "RF Communication Link", Lockheed Martin, El Paso, TX, July 2009.
- **Gonzalez, V.**, Pineda, R., Carrejo, E., Gonzalez, I., Pierluissi, N., "Enhanced Intercommunication System for ... ", Lockheed Martin, El Paso, TX, October 2008.
- Larios, G., Santin, E., **Gonzalez, V.**, et al. "Alestra Local Service Phase 0 TSD", AT&T – Alestra, Monterrey, MEX, Tech.Rep. DT-TSD-SWS-741, Oct 2000
- Woo, R.,Gonzalez, J., **Gonzalez, V.** , Pineda, R. , "Internet High Capacity TSD", AT&T – Alestra, Monterrey, MEX, Tech.Rep. DT-TSD-VAS-680, Jun 2000
- Corlay, L., Gonzalez, J., **Gonzalez, V.**, Pineda, R. , "Internet Integrated Test Plan (NVT,SVT and OSVT)", AT&T – Alestra, Monterrey, MEX, Tech.Rep. DT-NVT-VAS-368, May 1999
- Esparza, J., **Gonzalez, V.**, "OSS year 2000 Compliance", AT&T – Alestra, Monterrey, MEX, Tech.Rep. DT-FIM-GEN-361, Jan 1999
- **Gonzalez, V.**, Corlay, L., Pineda, R., et al "Internet Network Architecture", AT&T – Alestra, Monterrey, MEX, Tech.Rep. DT-ARQ-DNW-252, Jan 1999
- **Gonzalez, V.**, Mijares, D. "Telmex/Alestra Trunk Side Interconnection using ISUP NOM 112 Test Results", AT&T – Alestra, Monterrey, MEX, Tech.Rep. DT-NVT-SWN-088, Jun 1998
- Pineda, R., Calero, A., **Gonzalez, V.**, et al "Alestra Technical Service Description, Phase 2", AT&T – Alestra, Monterrey, MEX, Tech.Rep. DT-ARQ-SWN-050, Feb 1998
- **Gonzalez, V.** "Alestra Signaling Plan", AT&T – Alestra, Monterrey, MEX, Tech.Rep. DT-ARQ-SWN-004, Nov 1997

### Submitted Papers

## **Graduate Student Supervision**

### **Graduated Students**

- PhD: Musa, Ahmed, "Dynamic routing algorithm using wavelength (WDM) and code division multiplexing (CDM)", Dissertation, December 2005
- PhD: Medrano, John, "Optical Multi-protocol Label Switching Using Wavelength and Code Division Multiplexing", Dissertation, December 2005
- MSEE: Lopez, Alejandro, "Application tool for control of residential power grids", Project, December 2013
- MSEE: Kambhampati, Nagendra, "Placement of Multiple Base Stations for Energy Efficient Communication in Wireless Sensor Networks", Thesis, May 2012
- MSEE: Cruz, Diego: "Analysis of electric power simulators", Project, December 2012.
- MSEE: Moctezuma, Sergio: "Amethyst Cluster for visualization", Project, December 2011.
- MSEE: Esparza, Daniel: "Use of CPM and PERT for student advising optimization", Project, May 2010.
- MSCE: Mendoza, Patricia, "An Enhanced Method for the Existing Bluetooth Pairing Protocol to Avoid Impersonation Attacks", Thesis, Summer 2009.
- MSEE: Joel Quintana, "Optical access distribution using O-CDMA", Thesis, May 2009.
- MSEE: Dante E. Barragan, "Optimal Placement of Sensors for Network Lifetime Extension in Wireless Sensor Networks with Dynamic Routing", Thesis, Summer 2008
- MSEE: Abimael Sosa, "Personnel Tracking System Using a Bluetooth-based Epidemic Protocol", Thesis, Dec 2007
- MSEE: Kumar, Abhishek, "Roaming in Multi-Domain Wireless Networks", Thesis, May 2005
- MSEE: Escalera, Juan, "Security Enhancement of a WLAN using location tracking", Thesis, May 2005
- MSEE: Srinivas, Giduturi, "UTEP Network Modeling using OPNET", Project, May 2004
- MSEE: Korada, Ramana, "Finding the Trajectory Path of a Wireless Device in WLAN", Thesis, Dec 2003
- MSEE: Singh, Sumankumar; "Simulation of Circuit Switched Networked using OPNET", Project, Dec 2002

### **In progress**

- Perez, Oscar: "Agent-based advising process management"
- Price, Ryan: "Electric Generators"
- Rangel, Pablo: "Safety Corridor for UAS systems"
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### **Committee Member**

- Member of 13 additional Master Thesis committees
- Member of 6 additional Doctoral dissertation committees

## **SERVICE & PROFESSIONAL ACTIVITIES**

### **University Service**

- Founder and technical coordinator of UTEP robotic outreach program since 2010
- Member, CETaL Council of Fellows Sep 2010 August 2013
- Member, ABET curricular committee representative for ECE. Since Jan 2007.
- Member, Faculty Senate Information technologies committee. Sep 2006.- Aug 2009 (Chair 07-08)
- Chair of ECE transfer credit evaluation committee. Jan 2006 – Aug 2011.
- Advisor for transfer students in ECE. Jan 2006 – Aug 2011
- Chair, Circuit and Systems Committee in ECE department. spring 2005 - 2009.
- Member of multiple academic committees in ECE department. Since Fall 2003.

- Member at Large of the Graduate Council. Sep 2004 to Aug 2007.
- Member of Dean search committee (appointed by UTEPs president). Oct 2006 to Mar 2007.
- Member, SACS reaccreditation task force. Fall 2004.

### **Professional Societies**

- ABET Program Evaluator since June 2014
- Senior Member, Institute of Electrical and Electronic Engineers, Secretary of El Paso section (2009-2015) , 8/1986 – Present.
- Member, IEEE Communications Society, 1/1988 – Present.
- Member, IEEE Computer society, 1/1993 – Present.
- Member, Optical Society of America, 1/2003 – 12/2013.
- Member, American Society for Engineering Education, 1/2005 – Present.
- Member, IEEE Education Society, 1/2007 – Present.

### **Additional Training**

- ASEE Annual Conference, yearly from 2005-2013
- *ABET Program evaluator Training*, ABET, Baltimore, MD, June 2014
- *Frontiers in Education (IEEE)* ,2003 , 2006, 2010, 2015
- *SUN Conference on teaching and Learning*, UTEP–CETaL, El Paso, Texas, U.S.A. multiple years 2003 - 2015
- *Breaking Barriers in Communication: Technology-Enabled Active Learning in STEM Disciplines*, UCSD – Computer Science. July 2008.
- *How to re-engineer engineering education*, Bucknell Univ. Aug 2007
- *Advising workshop*, NACADA, Madison, WI, August 2006
- *ABET training*, IEEE, Portland, OR, June 2005
- *OPNET Modeler software*, OPNET, Los Angeles, California, U.S.A. May 2004
- Multiple Teaching-Learning Seminars, UTEP–CETaL, El Paso, Texas, U.S.A. Fall 2001 through Spring 2005
- *Technology Works! Faculty Workshops*, UTEP-DMC, El Paso, Texas, U.S.A. April 2003
- *Grant Writing Series*, UTEP–CETaL, El Paso, Texas, U.S.A. Fall 2002
- *Supercomm2001 Tutorials and Conferences*, IEC, Atlanta, Georgia, U.S.A. June 2001
- *Supercomm99 Tutorials and Conferences*, IEC, Atlanta, Georgia, U.S.A. June 1999
- *Leadership*, Alestra, Monterrey, México January 1999
- *Effective Negotiating*, Karras, Monterrey, México October 1998
- *Emerging Technologies in Telecommunications*, TRA Associates, Atlanta, Georgia, USA May 1993.
- *TCPIP Internals and Implementations*, INTEROP, Washington, DC, USA May 1992.
- *SNMP for Internet Network Management*, INTEROP, Washington, DC, USA May 1992
- *Telecommunications Symposium*, Hewlett Packard México, México, D.F. August 1991.
- *Emerging Technologies in Telecommunications*, TRA Associates, San Francisco, California, USA February 1991
- *OSI Networks*, INTEROP, San Jose, California, USA October 1990
- *Satellite Networks Maintenance*, VITACOM, Corp., México, D.F. September 1989
- *VSAT'S and Packet Switched Networks*, University of Maryland, Maryland, USA March 1989.
- *Operation and Maintenance of ITESM's satellite network*, Lehmex, S.A, México, D.F. August 1988.