

## **Aylin Yener**

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### **Education**

PhD, WINLAB, Electrical and Computer Engineering Dept., Rutgers University, NJ, May 2000.  
MS, WINLAB, Electrical and Computer Engineering Dept., Rutgers University, NJ, October 1994.  
BS, Electrical and Electronics Engineering Dept., Bogazici University, Istanbul, Turkey, June 1991.  
BS, Physics Dept., Bogazici University, Istanbul, Turkey, June 1991.

### **Experience**

Associate Professor (07/06-present)  
Department of Electrical Engineering, Penn State University, PA

Visiting Associate Professor (10/08-8/09; Sabbatical leave)  
Department of Electrical Engineering, Stanford University, CA

Assistant Professor (12/01-07/06)  
Department of Electrical Engineering, Penn State University, PA

Assistant Professor (8/00-12/01)  
Department of Electrical Engineering and Computer Science, Lehigh University, PA

Graduate Research Assistant (9/97-8/00)(7/93-6/97)  
WINLAB, Department of Electrical and Computer Engineering, Rutgers University, NJ.

Member of Technical Staff (6/97-9/97)  
LUCENT Technologies, Wireless Access Solutions - RF System Engineering Group, NJ

### **Research Highlights**

Funding to date:

- ARL Network Science CTA: Communication Networks Center (2009-2019)
- 6 NSF grants
- 2 DARPA grants
- 9 Industrial/Other grants

Total number of publications to date: 30 journal, 77 conference.

Total number of graduate students to date: Postdoctoral: 1 current; PhD: 5 graduated, 7 current; MS: 1 current, 8 graduated.

## Main Research Interests

Multiterminal Information Theory  
 Information Theoretic Security  
 Wireless Communication Theory  
 Wireless Networking  
 Signal Processing for Communications

## Funded Projects

### NSF

- Cognition, Collaboration, and Competition in Hybrid Wireless Networks (09/2007-08/2010), **NSF (CNS, NeTS-WN)**, \$300,000 (PI, with S. Kishore, ECE, Lehigh U.).
- Secure Capacity of Wireless Networks (09/2007-08/2010), **NSF, Cybertrust**, \$250,000 (PI, with S. Ulukus, ECE, UMD).
- CAREER: Signal Processing for Multiuser Multiantenna Wireless Communications (02/2003-01/2010), **NSF (CCR)**, \$406,000 (Sole PI).
- Multiuser Wireless Security (07/2005-06/2009), **NSF (CCF)**, \$240,000 (PI, with S. Ulukus, ECE, UMD).
- Multi-tier Hybrid Wireless Networks (10/2006-09/2008), **NSF (CNS, NeTS-ProWIN)**, \$143,416 (PI, with S. Kishore, ECE, Lehigh U.).
- Exploratory Research in Relay Networks of Agile Radios (04/2005-09/2006), **NSF (CNS)**, \$95,018 (co-PI, with PI T. La Porta, CSE, PSU).

### DoD

- Quality-of-Information-Aware Networks for Tactical Applications (QUANTA) (10/2009-09/2019), **US Army Research Laboratory: Network Science Collaborative Science Alliance (CTA)**, Communication Network Center, \$16,755,800, (General Members: Penn State-USC-UCDavis-UCSC (co-PI, with PI T. La Porta)
- Rethinking Mobile Ad Hoc Networks: A Non-equilibrium Information Theory (11/2006-5/2011), **DARPA ITMANET: Information Theory for Mobile Ad Hoc Networks Program**, \$6,500,000 (Team: D. Katabi, MIT; R. Berry, D. Guo, Northwestern; M. Haenggi, Notre Dame; **A. Yener, PSU**; S. Jafar, UCIrvine; N. Jindal, Minnesota; M. Neely, USC; J. Andrews (PI), R. Heath, S. Shakkottai, P. Stone, UT Austin.
- Control Over Network Coding for Enhanced Radio Transmission Optimization (07/2006-12/2007), **DARPA CBMANET: Control Based Mobile Ad Hoc Networks Program**, \$303,000 (co-PI, with PI T. La Porta, CSE, PSU). Other PIs/co-PIs of *CONCERTO* team (budgets not shown): G. Lauer, R. Ghanadan, BAE Systems; M. Effros, T. Ho, CalTech; P. Francis, Z. Haas, Cornell; M. Medard, A. Ozdaglar, MIT; M. Steenstrup, Stow Research; R. Koetter, UIUC; J. Kurose, D. Towsley, UMass.
- Enabling Logistics with Portable and Wireless Technology (07/2003-08/2004), **USMC**, \$510,000, (member of the research team with D.Hall, S. Puroo, I. Petrick, School of IST, PSU; S. Kumara, N. Gautam, T. Kim, Industrial Engineering, PSU; Z. Rado, PTI, PSU; R. Gray, Penn State Erie; A. Garga, ARL).

## Industry&State

- Networking and Security Research Center Designation (01/2007-07/2008), **Ben Franklin Technology Partners**, \$100,000, (co-PI, with PI T. La Porta, co-PIs R. Acharya, G. Cao, T. Jaeger, P. McDaniel).
- Sustainable Wireless Networks (01/2007-10/2007), **Raytheon** (via Networking and Security Research Center, PSU), \$50,000 (PI with T. Jaeger and T. La Porta, CSE, PSU).
- Technology RoadMap for 3G and Beyond (05/2006-12/2006), **Raytheon** (via Networking and Security Research Center, PSU), \$50,000 (PI with T. La Porta, CSE, PSU).
- Clustering for Wireless Ad Hoc Networks: A Joint Physical Layer, Multiple Access, and Routing Perspective (07/2005-06/2006), **Pennsylvania Infrastructure Technology Alliance**, \$60,000 (co-PI, with PI S. Kishore, ECE, Lehigh).
- Design of Efficient RFID Systems (01/2005-12/2005), **Pittsburgh Digital Greenhouse** (The Tech Collaborative) , \$144,000 (Sole PI).
- Lifetime Optimization of Ad Hoc Sensor Networks (06/2005-12/2005), **Telcordia** (via Networking and Security Research Center, PSU), \$50,000 (PI, with G. Cao, T. La Porta, CSE, PSU).
- Center of Excellence in Wireless Communications and Networking at Lehigh University (05/2001-05/2003), **AT&T Foundation**, \$200,000 (PI with R. Blum, T. Boulton, J. Hwang, EECS, Lehigh).
- Advances in Wireless Networking (Lehigh University) (09/2001-09/2002), **PADCOM** and **Ben Franklin Technology Partners**, \$90,000 (co-PI, with PI T. Boulton, EECS, Lehigh).

## Awards and Honors

DARPA Young Investigator Team Award for ITMANET Program (2006).

National Science Foundation CAREER Award (2003).

P.C. Rossin Endowed Assistant Professorship, Lehigh University (2001).

Graduation Honor List, Bogazici University (1991).

Ranked 71st from 800,000 students in the National University Entrance Exam (1987).

## Current Research Emphasis

Information security for wireless communication systems; information theory for wireless networks; relay assisted/cooperative communications; distributed algorithms for performance optimization in ad hoc networks; physical layer aided medium access control (MAC) and network layer design for ad-hoc networks; transceiver design for multiuser systems/ad hoc networks.

## Research Supervision

### Postdoctoral Researcher

- Satashu Goel (PhD 2009 Carnegie Mellon): 07/2009-Present

### Doctoral Students

- Xiang He: Cooperation and Information Theoretic Security in Wireless Networks (Post-comprehensive, 12/2008)

- Ertugrul Ciftcioglu: Wireless Relay Networks with Stochastic Arrivals (Post-comprehensive, 08/2009)
- Ye Tian : TBD (Start date: 08/2007)
- Min (Michael) Li: TBD (Start date: 08/2008)
- Ezgi Arslan: TBD (Start date: 08/2009)
- Aditya Kurve: TBD (Start date: 08/2009)
- Kaya Tutuncuoglu: TBD (Start date: 08/2009)

**MS Student**

- Basak Guler: TBD (Start date: 08/2009)

**Undergraduate Honor Thesis Student**

- Arnab Banik: Cooperative Sensing for Cognitive Radio Networks (Start date: 08/2009)

**Visiting Scholars**

- Tae-Jin Lee, Associate Professor, Sungkyunkwan University Suwon, South Korea (08/2007-08/2008).
- Yeonho Chung, Associate Professor, Pukyong National University, Busan, South Korea (09/2006-08/2007).

**Graduated Students**

- Min Chen, PhD, 09/2009: Resource Management for Wireless Ad Hoc Networks
- Ender Tekin, PhD, 08/2008: Information Theoretic Secrecy for Some Multiuser Wireless Communication Channels (Currently, postdoctoral research associate at Smith-Kettlewell Eye Research Institute, Rehabilitation Engineering Research Center, San Francisco, CA)
- Kyoungwan Lee, PhD, 12/2007: Cognitive Hybrid Wireless Relay Networks (Currently with Reverb Networks, Ashburn, VA)
- Changyoon Oh, PhD, 08/2005: Resource Allocation Techniques for Improved Performance of Multiuser Systems (Currently with Samsung Research, Seoul, Korea)
- Semih Serbetli, PhD, 08/2005: Efficient Transmit Strategies for Multiuser Multiple Antenna Systems (Currently with Philips Research, Eindhoven, The Netherlands)
- Lauren Huie, MS (Thesis), 08/2007: Joint Temporal Power Scheduling and Estimator Optimization for Sensor Networks (Currently with Air Force Research Lab, Rome, NY)
- Sandeep Bethanabhotla, MS (Thesis), 12/2005: Transmission Strategies for Lifetime Maximization of Sensor Networks (Currently with Broadcom, Irvine, CA)
- Girish Khandelwal, MS (Thesis), 08/2005: Efficient Design of Dense and Time Constrained RFID Systems (Currently with Qualcomm, San Diego, CA)
- Onder Filiz, MS (Thesis), 07/2003: Rank Constrained Temporal-Spatial Receivers for CDMA Systems (Currently with Turkcell, Istanbul, Turkey)
- Chien-Jen Huang, MS (Paper), 12/2007: Multiuser Competition in Cognitive Radio

- Sungmin Bae, MS (Paper), 12/2005: The Listing Protocol for the RFID Reader Collision Problem
- Atul Divakaran, MS (Paper), 09/2003: An Adaptive Channel Allocation Strategy for Wireless Multimedia QoS (Currently with T-Mobile)
- Battal Ozdemir, MS (Paper), 05/2003: Adaptive Probing Based Medium Access Control for Ad-Hoc Networks (Currently with Sabanci University and Tubitak, Istanbul, Turkey)
- Mikhail Lisovich, BS (Honor's Thesis), 05/2006: Capacity Scaling Laws in Ad-Hoc Networks (Currently at Cornell University)
- Chip McArtor, BS (Honor's Thesis), 05/2005: Lifetime Optimization of Sensor Networks: A Network Layer Approach

## Publications

### Book Chapter

- [1] X. He and A. Yener, "Cooperative Jamming: The Tale of Friendly Interference for Secrecy", *Securing Wireless Communications at the Physical Layer*, Editors: R. Liu and W. Trappe, Springer 2009.

### Journal Articles

- [30] X. He and A. Yener, "The Role of Feedback in Two-way Secure Communications", *IEEE Transactions on Information Theory*, Submitted for publication, October 2009.
- [29] X. He and A. Yener, "Cooperation with an Untrusted Relay: A Secrecy Perspective", *IEEE Transactions on Information Theory*, Submitted for publication, October 2008; revised October 2009.
- [28] Min Chen and Aylin Yener, "Power Allocation for F/TDMA Multiuser Two-way Relay Networks", *IEEE Transactions on Wireless Communications*, Submitted for publication March 2009; revised August 2009.
- [27] X. He and A. Yener, "Two-hop Secure Communication Using an Untrusted Relay", *EURASIP Journal on Communications and Networking- Special Issue on Physical Layer Security*, Submitted for publication December 2008; revised August 2009.
- [26] X. He and A. Yener, "Providing Secrecy With Structured Codes: Tools and Applications to Two-User Gaussian Channels", *IEEE Transactions on Information Theory*, Submitted for publication, July 2009.
- [25] K. Lee, X. He and A. Yener, "Resource Allocation for the Multi-Band Relay Channel: A Building Block for Hybrid Wireless Networks", *EURASIP Journal on Communications and Networking*, Submitted for publication June 2009.
- [24] M.Chen and A. Yener, "Multiuser Two-Way Relaying: Detection and Interference Management Strategies", *IEEE Transactions on Wireless Communications*, August 2009, 8(8), pp. 4296 - 4305.
- [23] E. Tekin and A. Yener, "The Gaussian Multiple-Access Wire-Tap Channel", *IEEE Transactions on Information Theory*, December 2008, 54(12), pp. 5747 - 5755.
- [22] J. Andrews, N. Jindal, M. Haenggi, R. Berry, S. Jafar, D. Guo, S. Shakkottai, R. Heath, M. Neely, S. Weber and A. Yener, "Rethinking Information Theory for Mobile Ad Hoc Networks", *IEEE Communications Magazine*, December 2008, 46(12), pp. 94 - 101.
- [21] J. Eom, T. Lee, R. Rietman and A. Yener, "An Efficient Framed-Slotted ALOHA Algorithm with Pilot Frame and Binary Selection for Anti-Collision of RFID Tags", *IEEE Communications Letters*, November 2008, 12(11), pp. 861 - 863.

- [20] E. Tekin and A. Yener, "The General Gaussian Multiple-Access and Two-way Wire-Tap Channels: Achievable Rates and Cooperative Jamming", *IEEE Transactions on Information Theory*, June 2008, 54(6), pp. 2735 - 2751.
- [19] S. Serbetli and A. Yener, "Relay Assisted F/TDMA Ad Hoc Networks: Node Classification, Power Allocation and Relaying Strategies", *IEEE Transactions on Communications*, June 2008, 56(6), pp. 937 - 947.
- [18] M. Chen, S. Serbetli, and A. Yener, "Distributed Power Allocation Strategies for Parallel Relay Networks", *IEEE Transactions on Wireless Communications*, February 2008, 7(2), pp. 552 - 561.
- [17] C. Oh and A. Yener, "Power Controlled CDMA Cell Sectorization with Multiuser Detection: A Comprehensive Analysis of Uplink and Downlink", *EURASIP Journal on Communications and Networking*, October 2007, Vol. 2007, Article ID 62379, 13 pages, 2007. doi:10.1155/2007/62379.
- [16] C. Oh and A. Yener, "Downlink Throughput Maximization for Interference Limited Systems: TDMA versus CDMA", *IEEE Transactions on Wireless Communications*, July 2007, 6(7), pp. 2454 - 2463.
- [15] G. Khandelwal, K. Lee, A. Yener, and S. Serbetli, "ASAP : A MAC Protocol for Dense and Time Constrained RFID Systems", *EURASIP Journal on Communications and Networking*, June 2007, Vol. 2007, Article ID 18730, 13 pages, 2007. doi:10.1155/2007/18730.
- [14] S. Serbetli and A. Yener, "MMSE Transmitter Design for Correlated MIMO Systems with Imperfect Channel Estimates: Power Allocation Trade-offs", *IEEE Transactions on Wireless Communications*, August 2006, 5(8), pp. 2295 - 2304.
- [13] J. Shin, K. Lee, A. Yener, and T. F. La Porta, "On Demand Diversity Wireless Relay Networks," *ACM Transactions on Mobile Networking and Applications (MONET) Special Issue On Soft Radio-Enabled Heterogeneous Wireless Networks*, August 2006, 11(4), pp. 593 - 611.
- [12] S. Serbetli and A. Yener, "MIMO-CDMA Systems: Signature and Beamformer Design with Various Levels of Feedback", *IEEE Transactions on Signal Processing*, July 2006, 54(7), pp. 2758 - 2772.
- [11] S. Serbetli and A. Yener, "Time Slotted Multiuser MIMO Systems: Beamforming and Scheduling Strategies," *EURASIP Journal on Wireless Communications and Networking, Special Issue on Multiuser MIMO Networks*, December 2004, Volume 2004, pp. 286-296.
- [10] O. Filiz and A. Yener, "Rank Constrained Temporal-Spatial Filters for CDMA Systems," *IEEE Transactions on Wireless Communications*, November 2004, 3(6), pp. 1974-1979.
- [9] S. Ulukus and A. Yener, "Iterative Transmitter and Receiver Optimization for CDMA Networks," *IEEE Transactions on Wireless Communications*, November 2004, 3(6), pp. 1879-1884.
- [8] S. Serbetli and A. Yener, "Transceiver Optimization for Multiuser MIMO Systems", *IEEE Transactions on Signal Processing*, January 2004, 52(1), pp. 214-226.
- [7] R. Sinha, A. Yener and R. D. Yates, "Noncoherent Multiuser Communications: Multistage Detection and Selective Filtering," *EURASIP Journal on Applied Signal Processing, Special Issue on Multiuser Detection and Blind Estimation*, December 2002, Volume 2002, No. 12, pp. 1415-1426.
- [6] A. Yener, R. D. Yates and S. Ulukus, "Combined Multiuser Detection and Beamforming for CDMA Systems: Filter Structures", *IEEE Transactions on Vehicular Technology*, September 2002, 51(5), pp. 1087-1095.
- [5] A. Yener, R. D. Yates and S. Ulukus, "CDMA Multiuser Detection: A Nonlinear Programming Approach," *IEEE Transactions on Communications*, June 2002, 50(6), pp. 1016-1024.
- [4] A. Yener, R. D. Yates and S. Ulukus, "Interference Management through Power Control, Multiuser Detection and Beamforming for CDMA Systems", *IEEE Transactions on Communications*, July 2001, 49(7), pp. 1227-1239.

- [3] C. U. Saraydar and A. Yener, "Adaptive Cell Sectorization for CDMA Systems", *IEEE Journal on Selected Areas in Communications, Wireless Communications Series*, June 2001, 19(6), pp. 1041-1051.
- [2] A. Yener and C. Rose, "Highly Mobile Users and Paging: optimal polling strategies", *IEEE Transactions on Vehicular Technology*, November 1998, 47(4), pp. 1251-1257.
- [1] A. Yener and C. Rose, "Genetic Algorithms Applied to Cellular Call Admission Problem: Local Policies", *IEEE Transactions on Vehicular Technology*, February 1997, 46(1), pp. 72-79.

### Conference Publications

- [77] X. He and A. Yener, "Secure Degrees of Freedom for Gaussian Channels with Interference: Structured Codes Outperform Gaussian Signaling", *IEEE Global Telecommunications Conference, Globecom'09*, Honolulu, Hawaii, December 2009. To appear.
- [76] Y. Tian and A. Yener, "The Gaussian Interference Relay Channel with a Potent Relay", *IEEE Global Telecommunications Conference, Globecom'09*, Honolulu, Hawaii, December 2009. To appear.
- [75] A. Yener and X. He, "Interference Channels with Strong Secrecy", *47th Annual Allerton Conference on Communication, Control, and Computing, Allerton'09*, Monticello, IL, September 2009.
- [74] E. N. Ciftcioglu, Y. E. Sagduyu, R. Berry, and A. Yener, "Cost Sharing with Network Coding in Two-Way Relay Networks", *47th Annual Allerton Conference on Communication, Control, and Computing, Allerton'09*, Monticello, IL, September 2009.
- [73] X. He and A. Yener, "Secure Communication with a Byzantine Relay", in Proceedings of the IEEE International Symposium on Information Theory, ISIT'09, Seoul, Korea, June 2009.
- [73] X. He and A. Yener, "The Gaussian Many-to-One Interference Channel with Confidential Messages", in Proceedings of the IEEE International Symposium on Information Theory, ISIT'09, Seoul, Korea, June 2009.
- [72] D. Gunduz, A. Yener, A. Goldsmith and H. V. Poor, "The Multi-way Relay Channel", *IEEE International Symposium on Information Theory, ISIT'09*, Seoul, Korea, June 2009.
- [71] M. Chen and A. Yener, "Power Allocation for Multi-Access Two-Way Relaying", *IEEE International Conference on Communications, ICC'09*, Dresden, Germany, June 2009.
- [70] X. He and A. Yener, "K-user Interference Channels: Achievable Secrecy Rate and Degrees of Freedom," *IEEE Information Theory Workshop on Networking and Information Theory, ITW'09*, Volos, Greece, June 2009.
- [69] X. He and A. Yener, "A New Outer Bound for the Gaussian Interference Channel with Confidential Messages", *Conference on Information Sciences and Systems, CISS'09*, Baltimore, NJ, March 2009.
- [68] O. Simeone and A. Yener, "The Cognitive Multiple Access Wire-tap Channel", *Conference on Information Sciences and Systems, CISS'09*, Baltimore, NJ, March 2009.
- [67] X. He and A. Yener, "Two-hop Secure Communication Using an Untrusted Relay: A Case for Cooperative Jamming," *IEEE Global Telecommunications Conference, Globecom'08*, New Orleans, LA, December 2008.
- [66] E. N. Ciftcioglu, A. Yener and R. Berry, "Stability Regions for Two-Way Relaying with Network Coding," *Wireless Internet Conference, WICON'08*, Maui, HI, November 2008.
- [65] X. He and A. Yener, "The Role of Feedback in Two-way Secure Communication," *42nd Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, October 2008.

- [64] X. He and A. Yener, "End-to-end Secure Multi-hop Communication with Untrusted Relays is Possible," *42nd Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, October 2008.
- [63] Xiang He and Aylin Yener, "Providing Secrecy with Lattice Codes", *46th Annual Allerton Conference on Communications, Control, and Computing, Allerton'08*, Monticello, IL, September 2008.
- [62] X. He and A. Yener, "The Role of an Untrusted Relay in Secret Communication," *IEEE International Symposium on Information Theory, ISIT'08*, Toronto, Canada, July 2008.
- [61] M. Chen and A. Yener, "Multiuser Two-Way Relaying for Interference Limited Systems," *IEEE International Conference on Communications, ICC'08*, Beijing, China, May 2008.
- [60] L. Huie, X. He and A. Yener, "Joint Power Scheduling and Estimator Design for Sensor Networks Across Parallel Channels," *IEEE International Conference on Communications, ICC'08*, Beijing, China, May 2008.
- [59] E. N. Ciftcioglu, A. Yener and R. Berry, "Stability of Bi-Directional Cooperative Relay Networks," *IEEE Information Theory Workshop, ITW'08*, Porto, Portugal, May 2008.
- [58] M. Chen and A. Yener, "Interference Management for Multiuser Two-Way Relaying," *Conference on Information Sciences and Systems, CISS'08*, Princeton, NJ, March 2008.
- [57] X. He and A. Yener, "On the Energy Delay Trade-off of a Two-Way Relay Network," *Conference on Information Sciences and Systems, CISS'08*, Princeton, NJ, March 2008.
- [56] X. He and A. Yener, "Rate Equivocation Region of a Class of Relay Channels with Orthogonal Components," *41st Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2007 (Invited Paper).
- [55] K. Lee and A. Yener, "Throughput Enhancing Cooperative Spectrum Sensing Strategies for Cognitive Radios," *41st Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2007 (Invited Paper).
- [54] Y. Li, Z. Shen, S. Kishore, and A. Yener, "Distributed and Collaborative Primary Signal Feature Estimation for Cognitive Radios under Communication Constraints," *41st Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2007 (Invited Paper).
- [53] E. Tekin and A. Yener, "Secrecy Sum-Rates for the Multiple-Access Wire-Tap Channel with Ergodic Block Fading," *45th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, September 2007.
- [52] E. Tekin and A. Yener, "Achievable rates for Two-way Wire-Tap Channels," *IEEE International Symposium on Information Theory, ISIT'07*, Nice, France, June 2007.
- [51] E. Tekin and A. Yener, "The Multiple Access Wire-Tap Channel: Wireless Secrecy and Cooperative Jamming," *Information Theory and Applications Workshop, ITA'07*, San Diego, CA, January 2007. (Invited Paper).
- [50] K. Lee and A. Yener, "Outage Performance of Cognitive Wireless Relay Networks," *IEEE Global Telecommunications Conference, Globecom'06*, San Francisco, CA, November 2006.
- [49] K. Lee and A. Yener, "Spectrum-Sensing Opportunistic Wireless Relay Networks: Outage and Diversity Performance," *40th Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2006.
- [48] E. Tekin and A. Yener, "Achievable Rates for the General Gaussian Multiple Access Wire-Tap Channel with Collective Secrecy," *44th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, September 2006.

- [47] M. Chen, C. Oh and A. Yener, "Efficient Scheduling for Delay Constrained CDMA Wireless Sensor Networks," *IEEE Vehicular Technology Conference, VTC'06 Fall*, Montreal, Canada, September 2006.
- [46] M. Chen, C. Oh and A. Yener, "Efficient Scheduling for Delay Constrained Multi-Rate CDMA Systems," *IEEE 9th International Symposium on Spread Spectrum Techniques and Applications, ISSSTA'06*, Manaus, Brazil, August 2006.
- [45] E. Tekin and A. Yener, "The Gaussian Multiple Access Wire-Tap Channel with Collective Secrecy Constraints," *IEEE International Symposium on Information Theory, ISIT'06*, Seattle, WA, July 2006.
- [44] S. Serbetli and A. Yener, "Power Allocation and Hybrid Relaying Strategies for F/TDMA Ad Hoc Networks," *IEEE International Conference on Communications, ICC'06*, Istanbul, Turkey, June 2006.
- [43] G. Khandelwal, A. Yener, K. Lee and S. Serbetli, "ASAP: A MAC Protocol for Dense and Time Constrained RFID Systems," *IEEE International Conference on Communications, ICC'06*, Istanbul, Turkey, June 2006.
- [42] G. Khandelwal, A. Yener and M. Chen, "OPT: Optimal Protocol Tree for Efficient Tag Identification in Dense RFID Systems," *IEEE International Conference on Communications, ICC'06*, Istanbul, Turkey, June 2006.
- [41] K. Lee and A. Yener, "Iterative Power Allocation Algorithms for Amplify/Estimate/Compress-and-Forward Multi-Band Relay Channels," *Conference on Information Sciences and Systems, CISS'06*, Princeton, NJ, March 2006.
- [40] M. Chen, S. Serbetli, and A. Yener, "Distributed Power Allocation for Parallel Relay Networks," *IEEE Global Telecommunications Conference, Globecom'05*, St. Louis, MO, November 2005.
- [39] E. Tekin, S. Serbetli and A. Yener, "On Secure Signaling for the Gaussian Multiple Access Wire-Tap Channel," *39th Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2005 (Invited Paper).
- [38] K. Lee and A. Yener, "On the Achievable Rate of Three-Node Cognitive Hybrid Wireless Networks," *International Conference on Wireless Networks, Communications, and Mobile Computing, WirelessCom'05*, Maui, HI, June 2005.
- [37] S. Serbetli and A. Yener, "Optimum Power Allocation for Relay Assisted F/TDMA Ad Hoc Networks," *International Conference on Wireless Networks, Communications, and Mobile Computing, WirelessCom'05*, Maui, HI, June 2005.
- [36] S. Serbetli and A. Yener, "Transmission Strategies for Correlated MIMO Links with Imperfect Channel Estimates," *IEEE International Conference on Communications, ICC'05*, Seoul, South Korea, May 2005.
- [35] K. Lee and A. Yener, "On Resource Allocation for the Multi-band Relay Channel," *Conference on Information Sciences and Systems, CISS'05*, Baltimore, MD, March 2005.
- [34] S. Serbetli and A. Yener, "Optimum Power Allocation for Multiuser Relay Networks," *Conference on Information Sciences and Systems, CISS'05*, Baltimore, MD, March 2005.
- [33] C. Oh and A. Yener, "Downlink Throughput Maximization: TDMA vs CDMA," *Conference on Information Sciences and Systems, CISS'05*, Baltimore, MD, March 2005.
- [32] S. Serbetli and A. Yener, "Beamforming and Scheduling Strategies for Time Slotted Multiuser MIMO Systems," *38th Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2004.

- [31] A. Yener and S. Kishore, "Distributed Power Control and Routing for Clustered CDMA Wireless Ad Hoc Networks," *IEEE Vehicular Technology Conference, VTC'04 Fall*, Los Angeles, CA, September 2004.
- [30] H. Zhu, G. Cao, A. Yener and A.D. Mathias, "EDCF-DM: A Novel Enhanced Distributed Coordination Function for Wireless Ad Hoc Networks," *IEEE International Conference on Communications, ICC'04*, Paris, France, June 2004.
- [29] S. Serbetli and A. Yener, "Signature Sequence Selection for CDMA Systems with Multiple Receiver Antennas," *IEEE International Conference on Communications, ICC'04*, Paris, France, June 2004.
- [28] S. Serbetli, S. Bethanabhotla and A. Yener, "The Effect of Channel Estimation on Transceiver Design for MIMO Systems with QoS Constraints," *Conference on Information Sciences and Systems, CISS'04*, Princeton, NJ, March 2004.
- [27] S. Serbetli and A. Yener, "Signature and Beamformer Design for MIMO-CDMA with Various Levels of Feedback," *Conference on Information Sciences and Systems, CISS'04*, Princeton, NJ, March 2004.
- [26] A. Yener and O. Filiz, "Rank Constrained Temporal-Spatial Filters for CDMA Systems in Multipath Channels," *IEEE Global Telecommunications Conference, Globecom'03*, San Francisco, CA, December 2003.
- [25] C. Oh and A. Yener, "Further Results on Adaptive CDMA Cell Sectorization with Linear Multiuser Detection," *37th Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2003 (Invited Paper).
- [24] C. Oh and A. Yener, "Adaptive CDMA Cell Sectorization with Linear Multiuser Detection," *IEEE Vehicular Technology Conference, VTC'03 Fall*, Orlando, FL, October 2003.
- [23] S. Serbetli and A. Yener, "Signature and Beamformer Optimization for MIMO-CDMA Based on the Mean Squared Error Criterion," *Conference on Information Sciences and Systems, CISS'03*, Baltimore, MD, March 2003.
- [22] O. Filiz and A. Yener, "Rank Constrained Temporal-Spatial Filters for CDMA Systems with Base Station Antenna Arrays," *Conference on Information Sciences and Systems, CISS'03*, Baltimore, MD, March 2003.
- [21] S. Serbetli and A. Yener, "Iterative Transceiver Optimization for Multiuser MIMO Systems," *40th Allerton Conference on Communications, Control and Computing*, Monticello, Illinois, October 2002.
- [20] A. Yener and S. Serbetli, "Transmitter Optimization for Multiuser MIMO Systems," *IEEE International Symposium on Advances in Wireless Communications, ISWC'02*, Victoria, BC, Canada, September 2002 (Invited Paper).
- [19] S. Ulukus and A. Yener, "Iterative Transmitter and Receiver Optimization for Synchronous CDMA Systems," *IEEE International Symposium on Information Theory, ISIT'02*, Lausanne, Switzerland, June 2002.
- [18] S. Ulukus and A. Yener, "Iterative Joint Optimization of CDMA Signature Sequences and Receiver Filters," *Conference on Information Sciences and Systems, CISS'02*, Princeton, NJ, March 2002.
- [17] P. Spasojevic and A. Yener, "Constrained Slowest Descent Detectors for Multiuser CDMA Systems," *IEEE International Symposium on Information Theory, ISIT'01*, Washington D.C., June 2001.
- [16] P. Spasojevic and A. Yener, "Improved Soft Interference Cancellation for CDMA Systems," *IEEE International Conference on Communications, ICC'01*, Helsinki, Finland, June 2001.

- [15] A. Yener and S. Ulukus, "On the Fading Channel Performance of Temporal-Spatial Filters for CDMA," *IEEE Vehicular Technology Conference, VTC'01*, Rhodes, Greece, May 2001.
- [14] A. Yener, "Nonlinear Programming Based Detectors for Multiuser Systems," *International Conference on Information Technology: Coding and Computing, ITCC'01*, Las Vegas, NV, April 2001, (Invited Paper).
- [13] R. Sinha, A. Yener and R. D. Yates, "Constrained Detection for Noncoherent Nonlinear Multiuser Communications," *34th Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, October 2000.
- [12] A. Yener and R. D. Yates, "Acquisition Dependent Random Access for Connectionless CDMA Systems," *IEEE Wireless Communications and Networking Conference, WCNC'00*, Chicago, IL, September 2000 (Invited Paper).
- [11] A. Yener, R. D. Yates and S. Ulukus, "Combined Temporal and Spatial Filter Structures for CDMA Systems," *IEEE Vehicular Technology Conference*, Boston, MA, September 2000.
- [10] A. Yener and R. D. Yates, "Decorrelating Acquisition and Access for Connectionless CDMA," *Symposium for Interference Rejection and Signal Separation, IRSS'00*, Newark, NJ, March 2000 (Invited Paper).
- [9] A. Yener, R. D. Yates and S. Ulukus, "A Nonlinear Programming Approach to CDMA Multiuser Detection," *33rd Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, October 1999.
- [8] C. U. Saraydar and A. Yener, "Capacity Enhancement for CDMA Systems Through Adaptive Cell Sectorization," *IEEE Wireless Communications and Networking Conference, WCNC'99*, New Orleans, LA, September 1999.
- [7] A. Yener and R. D. Yates, "Multiuser Access Capacity of Packet Switched CDMA Systems," *IEEE Vehicular Technology Conference, VTC'99*, Houston, TX, May 1999.
- [6] A. Yener, R. D. Yates and S. Ulukus, "Joint Power Control, Multiuser Detection and Beamforming for CDMA Systems," *IEEE Vehicular Technology Conference, VTC'99*, Houston, TX, May 1999.
- [5] A. Yener and R. D. Yates, "Multiuser Access Detection for CDMA Systems," *Conference on Information Sciences and Systems, CISS'98*, Princeton, NJ, March 1998.
- [4] A. Yener, C. Rose and R. D. Yates, "Optimum Power Scheduling for CDMA Access Channels," *IEEE Global Telecommunications Conference, Globecom'97*, Phoenix, AZ, November 1997. Also presented in INFORMS Spring'98 Meeting (Invited Talk), Montreal, Canada, April 1998.
- [3] A. Yener and C. Rose, "Paging Strategies for Highly Mobile Users," *IEEE Vehicular Technology Conference, VTC'96*, Atlanta, GA, April 1996.
- [2] A. Yener and C. Rose, "Local Call Admission Policies for Cellular Networks Using Genetic Algorithms," *Conference on Information Science and Systems, CISS'95*, Baltimore, MD, March 1995.
- [1] A. Yener and C. Rose, "Near-Optimal Call Admission Policies for Cellular Networks Using Genetic Algorithms," *IEEE Wireless'94*, Calgary, Canada, July 1994.

## Recent Invited Talks

"Cooperation, Interference and Secrecy: Lessons learned from Information Theory", IEEE Computer Communications Workshop (CCW), Social session on Physical Layer Security, Lenox, MA, October 2009.

"Cooperation with Untrusted Relays", Information Sciences Laboratory Colloquium, Stanford University, June 2009; Networking, Communications and DSP Seminar, Dept. of EECS, University of California, Berkeley, April 2009.

“Recent Results on Two-Way Communications with Relays”, IEEE Communication Theory Workshop (CTW), St. Croix, USVA, May 2008.

## Professional Activities

**Member**, IEEE.

**Chair**, Student Committee, IEEE Information Theory Society, 2007-present.

**Editor**, IEEE Transactions on Wireless Communications, 2001-present.

**Editor**, IEEE Transactions on Communications, 2009-present.

**General Chair**, Second Annual School of Information Theory, Evanston, IL, August 2009. (with Gerhard Kramer of USC)

**Organizer and Chair**, First Annual School of Information Theory, University Park, PA, June 2008. (with Gerhard Kramer of Bell Labs)

**TPC Chair**, *Communication Theory Symposium*, IEEE International Conference on Communications (ICC'09), Dresden, Germany, June 2009.

**TPC Chair**, *Communication Track*, 42nd Asilomar Conference on Signals, Systems and Computers, Pacific Grove, Pasific Grove, October 2008.

**TPC Co-chair**, *Track 2: MAC and Cross-Layer Design*, 21st Annual IEEE International Symposium on Personal Radio and Mobile Communications, (PIMRC'10), Istanbul, Turkey, September 2010.

**TPC Co-chair**, *Wireless Communications Symposium*, IEEE International Conference on Communications (ICC'08), Beijing, China, May 2008.

**TPC Co-chair**, *Communications and Networking Track*, 39th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, Pasific Grove, November 2005.

**TPC Co-chair**, *Symposium on Information Theory*, IEEE WirelessCom 2005, Maui, HI, June 2005.

**Tutorial Chair**, IEEE International Symposium on Information Theory, ISIT'12, Boston, MA, June 2012.

**Organizer and Chair**, *Panel on Cooperative Communication for Future Wireless Systems*, IEEE Wireless Communications and Networking Conference (WCNC'07), Hong Kong, March 2007.

**TPC Member**, Technical Program Committee, *Wireless Communications Symposium*, IEEE Global Telecommunications Conference 2010, Miami, FL, December 2010.

**TPC Member**, Technical Program Committee, IEEE International Symposium on Information Theory, ISIT'10, Austin, TX, June 2010.

**TPC Member**, Technical Program Committee, *Wireless Communications Symposium*, IEEE International Conference on Communications 2010, Cape Town, South Africa, May 2010.

**TPC Member**, Technical Program Committee, *Communication Theory Symposium*, IEEE International Conference on Communications 2010, Cape Town, South Africa, May 2010.

**TPC Member**, Technical Program Committee, *Wireless Communications Symposium*, IEEE Global Telecommunications Conference 2009, Honolulu, HI, December 2009.

**TPC Member**, Technical Program Committee, *Communication Theory Symposium*, IEEE Global Telecommunications Conference 2008, New Orleans, LA, November 2008.

**TPC Member**, Technical Program Committee, Conference on Information Theory and Statistical Learning (ITSL'08), Las Vegas, NV, June 2008.

**TPC Member**, Technical Program Committee, IEEE Information Theory Workshop (ITW), Porto, Portugal, May 2008.

**TPC Member**, Technical Program Committee, IEEE Wireless Communications and Networking Conference, Las Vegas, NV, March 2008.

**TPC Member**, Technical Program Committee, *Communication Theory Symposium*, IEEE Global Telecommunications Conference 2007, Washington D.C., November 2007.

**TPC Member**, Technical Program Committee, IEEE Vehicular Technology Conference, Baltimore, MD, September 2007.

**TPC Member**, Technical Program Committee, International Conference on Computer Communications and Networks, Communication and Information Theory Symposium, Honolulu, HI, August 2007.

**TPC Member**, Technical Program Committee, IEEE Wireless Communications and Networking Conference, Hong Kong, China, March 2007.

**TPC Member**, Technical Program Committee, *Communication Theory Symposium*, IEEE Global Telecommunications Conference 2006, San Francisco, CA, November 2006.

**TPC Member**, Technical Program Committee, *Communication Theory Symposium*, IEEE Global Telecommunications Conference 2005, St.Louis, MO, December 2005.

**TPC Member**, Technical Program Committee, *Communication Theory Symposium*, IEEE International Conference on Communications, Seoul, Korea, May 2005.

**TPC Member**, Technical Program Committee, ACM SIGCOMM 2005 Asia Workshop, Beijing, China, April 2005.

**TPC Member**, Technical Program Committee, *General Conference*, IEEE Global Telecommunications Conference 2004, Dallas, TX, November 2004.

**TPC Member**, Technical Program Committee, IEEE Vehicular Technology Conference, Los Angeles, CA, September 2004.

**TPC Member**, Technical Program Committee, *Wireless Networking Symposium*, IEEE International Conference on Communications, Paris, France, June 2004.

**TPC Member**, Technical Program Committee, IEEE Vehicular Technology Conference, Genova, Italy, May 2004.

**TPC Member**, Technical Program Committee, *Wireless Communications Symposium*, IEEE Global Telecommunications Conference 2003, San Francisco, CA, November 2003.

**TPC Member**, Technical Program Committee, IEEE Vehicular Technology Conference, Orlando, FL, September 2003.

**TPC Member**, Technical Program Committee, *Communication Theory Symposium*, IEEE International Conference on Communications, Anchorage, AK, May 2003.

**TPC Member**, Technical Program Committee, *Advanced Signal Processing for Communications Symposium*, IEEE International Conference on Communications, Anchorage, AK, May 2003.

**TPC Member**, Technical Program Committee, *Communication Theory Symposium*, IEEE Global Telecommunications Conference 2002, Taipei, Taiwan, November 2002.

**TPC Member**, Technical Program Committee, IEEE Vehicular Technology Conference, Vancouver, Canada, September 2002.

**TPC Member**, Technical Program Committee, *Advanced Wireless Communications Systems Symposium*, IEEE International Conference on Communications, New York, NY, April 2002.

**Member**, International Program Committee, IASTED International Conference on Wireless and Optical Communications, Banff, Canada, July 2002, July 2003.

**Session Chair/Organizer,**

47th Annual Allerton Conference on Communication, Control and Computing, Invited session organizer: Information Security, Monticello, IL, September 2009.

IEEE International Symposium on Information Theory, ISIT'09, Session chair: Generation and Cost of Secrecy, Seoul, Korea, June 2009.

IEEE Information Theory Workshop, ITW'09, Session chair: Channel Coding 1, Volos, Greece, June 2009.

IEEE International Conference on Communications, ICC'09, Session chair: Relaying, Dresden, Germany, June 2009.

IEEE International Symposium on Information Theory, ISIT'08, Session chair: Secrecy Capacity and Networks, Toronto, Canada, July 2008.

IEEE Information Theory Workshop, ITW'08, Session chair: Relaying I, Porto, Portugal, May 2008.

Conference on Information Sciences and Systems, CISS'08, Session chair: Receiver Design, Princeton, NJ, March 2008.

IEEE Global Telecommunications Conference, Communication Theory Symposium, Session chair: Cognitive and Cooperative Networks, Washington, D.C., November 2007.

Asilomar Conference on Signals, Systems and Computers, Invited session organizer and chair: Network Information Theory, Pacific Grove, CA, November 2007.

IEEE International Symposium on Information Theory, Session chair: Wire-Tap Channels II, Nice, France, June 2007. November 2007.

IEEE Global Telecommunications Conference, Communication Theory Symposium, Session chair: Cooperative Networks II, San Francisco, CA, November 2006.

IEEE WirelessCom 2005, *Symposium on Information Theory*, Session Chair, Maui, HI, June 2005.

IEEE International Conference on Communications, Session Chair, Seoul, Korea, May 2005.

IEEE Vehicular Technology Conference, Wireless Access Track, Co-chair: CDMA II, Los Angeles, CA, September 2004.

Conference on Information Sciences and Systems, CISS'04, Session Chair, Princeton, NJ, March 2004.

IEEE Global Telecommunications Conference, Wireless Communication Symposium, Session chair: Multiple Antenna Systems I, San Francisco, CA, November 2003.

Asilomar Conference on Signals, Systems and Computers, Invited session organizer: Adaptive Communication Systems, Pacific Grove, CA, November 2003.

IEEE International Conference on Communications, Session chair: Multiuser Detection II, New York, NY, April 2002.

IEEE Vehicular Technology Conference, Session Chair, Boston, MA, September 2000.

**Chapter Chair**, IEEE Lehigh Valley Signal Processing Society, 2001.

**NSF Review Panelist**- In CCR, FMF, ITR, ECS, CCF, NeTS programs in years 2001-2009

**Reviewer,**

IEEE Transactions on Information Theory  
 IEEE Transactions on Communications  
 IEEE Transactions on Wireless Communications  
 IEEE Journal on Selected Areas in Communications  
 IEEE Transactions on Signal Processing  
 IEEE Transactions on Vehicular Technology  
 IEEE/ACM Transactions on Networking  
 IEEE Communications Letters  
 IEEE Transactions on Circuits and Systems I  
 Signal Processing Journal (Elsevier)  
 EURASIP Journal on Applied Signal Processing  
 EURASIP Journal on Wireless Communications and Networking  
 ICC, GLOBECOM, WCNC, INFOCOM, VTC, ISSSTA  
 MOBICOM, ICUPC, WINLAB Workshop

**Thesis Committee Membership,**

*Completed*

- \* Dissertation Committee Member: Jack Chuang, August 2008, Advisor: R. Narayanan
- \* Dissertation Committee Member: Gyoughwan Kim, May 2008 Carnegie Mellon University, Advisor: R. Negi
- \* Dissertation Committee Member: Patrick Traynor, February 2008, Advisor: P. McDaniel
- \* Dissertation Committee Member: Sangwoo Lee, July 2007, Advisor: M. Kavehrad
- \* Dissertation Committee Member: Ozcan Ozturk, March 2007, Advisor: M. Kandemir
- \* Dissertation Committee Member: Jaesheung Shin, February 2007, Advisor: T. La Porta
- \* Dissertation Committee Member: Matthew Pirretti, November 2006, Advisor: N. Vijaykrishnan
- \* Dissertation Committee Member: Hendra Saputra, August 2005, Advisor: M. Kandemir and N. Vijaykrishnan
- \* Dissertation Committee Member: Wensheng Zhang, July 2005, Advisor: G. Cao
- \* Dissertation Committee Member: Liangzhong Yin, September 2004, Advisor: G. Cao
- \* Dissertation Committee Member: Hao Zhu, July 2004, Penn State, Advisor: G. Cao
- \* Dissertation Committee Member: Byungtae Kang, April 2004, Penn State, Advisor: J. Irwin
- \* Dissertation External Committee Member: Rajnish Sinha, Rutgers University, September 2003, Advisor: R. Yates
- \* MS Thesis Committee Member: Hao-Ting Lin, Penn State, July 2003, Advisor: D. Miller
- \* MS Paper Committee Member: Manuel Mendoza, Penn State, November 2002, Advisor: J. Breakall
- \* Dissertation Committee Member: Xiang Gao, Lehigh University, July 2002, Advisor: T. Boulton
- \* External examiner: L. G. F. Trichard, University of Sydney, April 2002, Advisors: J. Evans and I. Collings

*In Progress*

- \* Dissertation Committee Member: Gang Xiong, Lehigh University, Advisor: S. Kishore
- \* Dissertation Committee Member: Zhichao Zhu, Penn State, Advisor: G. Cao
- \* Dissertation Committee Member: Raju Kumar, Penn State, Advisor: T. LaPorta

**Teaching**

*Student Rating of Teaching Effectiveness Scores for “Overall Quality of Instructor” (out of 7) are noted next to the semester the course was taught along with the college of engineering (COE) average.*

**Penn State, EE 561: Information Theory**

*Semesters taught:* Fall 2007 (6.50; COE avg. ?), Fall 2009 (?; COE avg. ?)

*Enrollment:* 15, 17

*Description:* Graduate level information theory.

**Penn State, EE 560: Stochastic Processes and Estimation**

*Semester taught:* Fall 2006 (5.53; COE avg.?)

*Enrollment:* 57

*Description:* Graduate level probability, random variables and random processes. Core course for the PhD candidacy exam for the following sub-areas of the Signals and Systems Area: Communications, Networking, Signal Processing, Image Processing.

**Penn State, EE 597E: Multiuser Wireless Communications**

*Semester taught:* Spring 2006 (6.71; COE avg. 5.47)

*Enrollment:* 17

*Description:* Graduate level (advanced); heavy research component. Developed by Prof. Yener.

**Penn State, EE 497A: Fundamentals of Wireless Communications**

*Semester taught:* Spring 2004 (6.04; COE avg. 5.54), Spring 2005 (6.42; COE avg. 5.60), Spring 2007 (4.56; COE avg.?)

*Enrollment:* 35, 17, 13

*Description:* Senior elective, introductory wireless communications. Developed by Prof. Yener.

**Penn State, EE 568: Digital Communications**

*Semester taught:* Fall 2003 (6.69; COE avg. 5.55), Fall 2004 (6.14; COE avg. 5.38), Fall 2005 (5.90; COE avg. 5.47).

*Enrollment:* 21, 18, 11

*Description:* Graduate level, core digital communications course.

**Penn State, EE 367/360: Communication Systems**

*Semester taught:* Spring 2003 (5.81; COE avg. 5.51), Spring 2008 (?; COE avg. ?)

*Enrollment:* 32, 23

*Description:* Junior level communications course emphasizing analog/digital modulation techniques.

**Penn State, EE 562: Detection and Estimation Theory**

*Semester taught:* Fall 2002 (4.67; COE avg. 5.40)

*Enrollment:* 10

*Description:* Graduate level detection and estimation theory.

**Penn State, EE 597J: Spread Spectrum Communications**

*Semester taught:* Spring 2002 (5.95; COE avg. 5.59)

*Enrollment:* 25

*Description:* Graduate level course emphasizing the principles and performance of spread spectrum based communication systems.

**Lehigh, ECE 450: Code Division Multiple Access Systems**

*Semester taught:* Spring 2001

*Enrollment:* 11

*Description:* Advanced graduate course emphasizing physical layer techniques for CDMA systems.

**Lehigh, ECE 341: Fundamentals of Wireless Communications**

*Semester taught:* Fall 2000

*Enrollment:* 16

*Description:* Senior/First-year graduate course. Course taught as ECE 350 & ECE 450 (Special Topics) in Fall 2000, subsequently named ECE 341 as a permanent course.

**University Service**

Sabbatical Review Committee, College of Engineering (9/2009-present)

Undergraduate Curriculum Committee, EE Department (9/2002-present)

Signals and Systems Area Committee, EE Department (11/2001-present)

Member of the Strategic Planning Task Force on Information Technologies and Cyber Infrastructure, College of Engineering (10/2007-2/2008)

Organizer of the Signals and Systems Area Seminars, EE Department (9/2006-10/2007)

Graduate Council, alternate (elected), College of Engineering (3/2004-2006)

Colloquium Organizing Committee, EE Department (9/2003-5/2006)

**Personal**

Citizen of Turkey, permanent resident of USA.

*Last updated, October 2009.*