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I. INTRODUCTION

This annual report of the Department of Electrical and Computer Engineering (ECE) covers the period from July 1, 2004 to June 30, 2005. During this period the department experienced exciting developments in terms of faculty recruitment, growth in student enrollment, visits by three reviewers to evaluate our PhD proposal, and the development of ABET processes to complete our efforts to accredit the two undergraduate programs in Electrical Engineering (EE) and Computer and Communications Engineering (CCE).

Three new faculty members joined the department in September 2004: Associate Professor Walid Ali-Ahmad, Associate Professor Lauay Jalouf, and Assistant Professor Zaher Dawy. The three new faculty members, with the existing faculty members, make the ECE department a center of excellence for research and education in wireless communications. In February 2005, Assistant Professor Wael Noureddine joined the department, but unfortunately, due to personal reasons, he resigned at the end of the academic year.

Student enrollment in the department continued to grow. The department is now home to more than ten percent of the total undergraduate student population at AUB. The students joining the department are consistently the top applicants to the university. Graduate student enrollment also increased during the period covered by this report compared to previous years.

The proposal to start a PhD program in the department was reviewed in April and May 2005 by Professor Munther Dahleh (EECS, Massachusetts Institute of Technology), Professor Kenneth Jenkins (Head of EE, Pennsylvania State University), and Professor Fawwaz Ulaby (VP Research, University of Michigan). Their reviews were positive and the feedback that they gave will be used to further enhance our proposal. The current plan is to begin the PhD program during academic year 2006–07. An ECE Graduate Committee (EGC) was created in September 2004 to study graduate applications, continuously improve the graduate programs, and prepare for the launch of the PhD program.

The department continued its efforts to obtain ABET accreditation for its undergraduate programs. Self-study reports for the CCE and EE programs were prepared in anticipation of the visit by ABET reviewers. Processes were established for continuous improvement by reviewing course outcomes, program outcomes, and program objectives. The processes involve faculty, students, alumni, and employers.

An ECE Undergraduate and ABET Committee (EUAC) was created in September 2004 to deal with all issues related to the undergraduate programs and accreditation. Cognizant faculty committees were created for each course to assess the achievement of course outcomes. An ECE Student Advisory Committee was established to provide feedback about learning outcomes to the EUAC. The External Advisory Board of the department is consulted regularly as part of the feedback from alumni and employers.

As this annual report reflects, ECE has worked hard and accomplished a great deal in a number of areas in just one year. Special thanks to Mrs. Rabab Ali Shakra, secretary of the department, and Mr. Bassam Frem, CCE student, for preparing the data for this report.

Best regards,
Ayman Kayssi
Chairman

II. PERSONNEL

Faculty

Full-Time Faculty

Professors
Al-Alaoui, M. Adnan, PhD, Georgia Institute of Technology; Areas of interest: Analog and digital signal processing with applications to filters, communications, controls, and biomedical engineering; pattern recognition and neural networks with applications to character, speech and image recognition. (adnan@aub.edu.lb)
Chaaban, Farid, PhD, University of Liverpool; Areas of interest: Design and analysis of electric machines and drives; energy systems and their impact on the environment; air pollution from power plants. (fbchaban@aub.edu.lb)
Chedid, Riad, PhD, University of London; Areas of interest: Energy policy and planning; energy modeling; design, planning and operational aspects of renewable energy conversion systems; frequency and voltage control, stability problems; computer-aided design of electromagnetic/electromechanical devices; design and operation of electric drives. (chedid@aub.edu.lb)
Dib, Hassan, PhD, University of Bath; Areas of interest: Performance evaluation of parallel processing systems; application of fuzzy methodology to performance evaluation in parallel processing systems; performance evaluation of reconfigurable computer architectures; simulation for engineering education. (diab@aub.edu.lb). On leave during 2004–05.
El-Hajj, Ali, Docteur Ingénieur, University of Rennes 1; Areas of interest: Antenna theory; electromagnetic field computations; software development; telecommunication applications. (elhajj@aub.edu.lb)
Hajj, Ibrahim, PhD, University of California, Berkeley; Areas of interest: Design and verification of VLSI circuits and systems; design for reliability and optimization; design automation; mixed-mode simulation; fault simulation and testing. (ibhajj@aub.edu.lb). Dean of the Faculty of Engineering and Architecture.
Kabalan, Karim, PhD, Syracuse University; Areas of interest: Antenna theory; electromagnetic field computations; software development; telecommunication applications. (kabalan@aub.edu.lb)
Karaki, Sami, PhD, University of Manchester; Areas of interest: Renewable energy systems modeling; generation expansion planning and production costing; application of neural networks, fuzzy systems, and genetic algorithms in energy systems. (skaraki@aub.edu.lb)
Kayssi, Ayman, PhD, University of Michigan, Ann Arbor; Areas of interest: Internet technologies; wireless applications; computer networks and data communications; VLSI design, modeling and simulation; digital system testing. (ayman@aub.edu.lb)
Mrad, Fuad, PhD, Purdue University; Areas of interest: Control; robotics; industrial automation; instrumentation. (fmrad@aub.edu.lb)
Saade, Jean, PhD, Syracuse University; Areas of interest: Communication systems; fuzzy sets and logic; design of intelligent systems using fuzzy logic and other tools; optimization techniques for intelligent and decision-making systems. (jsaade@aub.edu.lb)
Sabah, Nassir, PhD, State University of New York, Buffalo; Areas of interest: Electrophysiology of nerve and muscle, modeling of the electrical behavior of nerve and muscle cells, modeling of the behavior of the human neuromuscular system. (nsabah@aub.edu.lb)
Associate Professors
Ali-Abd, Walid, PhD, University of Michigan, Ann Arbor; Areas of interest: Millimeter-wave 4G radio systems; multi-mode multi-band reconfigurable radio front-ends; digital radio transceivers for 3G systems; RF MEMS; applied EM applications. (wa29@aub.edu.lb)
Jalloul, Louay, PhD, Rutgers University; Areas of interest: Communication theory; wireless systems; multiple access communication; spread spectrum systems; diversity systems including MIMO and adaptive antenna arrays; ultra-wide band radio; applications of forward error correction and adaptive modulation and coding; synchronization; interference cancellation and multi-user detection and applications of digital signal processing methods in modern design. (lj07@aub.edu.lb)

Assistant Professors
Abou Faycal, Ibrahim, PhD, Massachusetts Institute of Technology; Areas of interest: Information theory; digital communication; optical communication; stochastic systems. (ja14@aub.edu.lb)
Artail, Hassan, PhD, Wayne State University; Areas of interest: Distributed computing and clusters; high-availability, real-time software over networked systems; embedded systems and smart sensors; communication protocol design; software project management and rollout. (ha27@aub.edu.lb)
Bazzi, Ali, PhD, Massachusetts Institute of Technology; Areas of interest: Theory of error correcting codes; design and analysis of algorithms; cryptography; number theory. (ib13@aub.edu.lb)

Chehab, Ali, PhD, University of North Carolina at Charlotte; Areas of interest: VLSI design and design for testability (DFT); dynamic power supply current (IDDT) testing; development of automatic test pattern generation (ATPG). (chelahb@aub.edu.lb)

Dawy, Zaher, PhD, Munich University of Technology; Areas of interest: Wireless communications (GSM/EDGE, UMTS); hybrid cellular-ad hoc networks; multiple user information theory; multimedia transmission over IP networks; bioinformatics and statistical genetics. (ze03@aub.edu.lb)
Karameh, Fadi, PhD, Massachusetts Institute of Technology; Areas of interest: System identification and control; biological systems; neural system modeling; gene expression arrays. (fk14@aub.edu.lb)
Mansour, Mohamad, PhD, University of Illinois at Urbana Champaign; Areas of interest: Digital IC design; VLSI for communications, signal processing and general purpose computing systems; coding theory; code design on graphs; decoding algorithms and architectures; algorithm and architecture optimizations for VLSI using abstract algebra. (mmansour@aub.edu.lb)

Noureddine, Wael, PhD, Stanford University; Areas of interest: High speed computer networks; network protocols; network architecture and performance; quality of service for data and multimedia applications. (wn10@aub.edu.lb)

Part-Time Faculty
Senior Lecturers
Chahine, Hazem, Diploma, Loughborough College of Technology
Khaled, Mohamad, Dr. Sc. Tech., Zurich Institute of Technology

Lecturers
Abou Chahine, Soubhi, PhD, ENST Paris
Chaar, Lana, PhD, University of Minnesota
Damaj, Issam, PhD, London South Bank University

Assistant Professor Walid Ali-Abd
Professor Ali-Abd received his BE in Electrical Engineering degree with distinction from the American University of Beirut in 1988, and his MSc and PhD in Electrical Engineering from the University of Michigan, Ann Arbor, in 1990 and 1993, respectively. Prior to joining the ECE department, he was a principal member of technical staff at Maxim Integrated Products, Sunnyvale, CA.

Associate Professor Louay Jalloul
Professor Jalloul received his BS degree in Electrical Engineering from the University of Oklahoma in 1985. He received his MS degree in ES from Ohio State University in 1988, and his PhD in EE from Rutgers University in 1993. Prior to joining the ECE department, he was with Infinion Technologies as the systems design group manager working on the design of the CDMA cellular digital signal processor.

Assistant Professor Zaher Dawy
Professor Dawy received his BE degree in Computer and Communications Engineering with high distinction from the American University of Beirut in 1998. He received his MSc and Dr.-Ing. degrees in Electrical Engineering with excellent distinction from Munich University of Technology (TUM) in 2000 and 2004, respectively. Prior to joining the ECE department, he led a research group at TUM, taught graduate courses on communications engineering and information theory, and supervised more than 15 master thesis topics.
Assistant Professor Wael Noureddine

Professor Noureddine received his BE degree in Computer and Communications Engineering from the American University of Beirut in 1996. He received his MS and PhD in EE from Stanford University in 1998 and 2002, respectively. Prior to joining the ECE department, he was working as a protocol architect with Chelsio Communications, building high speed networking equipment.

EXTERNAL ADVISORY BOARD

The External Advisory Board (EAB) plays an important role in advising, promoting, and supporting the ECE department. The EAB met on June 29, 2005. The agenda of that meeting was: 1) state of the ECE department; 2) PhD program in ECE; 3) accreditation of the undergraduate programs; 4) job opportunities; 5) strategic planning; 6) other business.

External Advisory Board Members
Mr. Ghassan Boulbol, Liban Cables
Mr. Jalal Fawaz, ACT
Mr. Zuhaier Haddad, CCC
Mr. George Kadifa, IBM
Mr. Kamal Kalot, Tamer Freres
Dr. Toni Kareh, CIS
Dr. John Makhoul, BBN Technologies.
Mr. Youssef Matar, Dar-Al-Handassah, Chairman of the EAB
Mr. Abdel Wahab Omari, Pillar Invest
Dr. Gabriel M. Rebeiz, University of California, San Diego
Mr. Abdul Raouf Rifai, Khatib & Alami
Mr. Husseini Rifai, MDC

III. FULL-TIME FACULTY, RESEARCH AND OTHER ACTIVITIES

Teaching

The courses taught by the full-time faculty members in the department, with the corresponding number of students, are shown in the list below:

I. Abou-Faycal
Fall: EECE 330 (48) and EECE 641 (16)
Spring: EECE 330 (40) and EECE 660C (11)

M. A. Al-Alaoui
Summer: EECE 440 (23)
Fall: EECE 691C (20)
Spring: EECE 440(21) and EECE 673C (8)

W. Ali Ahmad
Fall: EECE 443 (73)
Spring: EECE 443 (35) and EECE 643 (21)

H. Artail
Fall: EECE 430 (45) and EECE 679 (48)
Spring: On Paid Research Leave

L. Bazzi
Fall: EECE 330 (50) and EECE 642 (15)
Spring: EECE 330 (27) and EECE 635C (13)

F. Chaaban
Summer: EECE 470 (24)
Fall: EECE 370 (61) and EECE 570 (30)
Spring: EECE 470 (24) and EECE 692 (25)

R. Chedid
Summer: EECE 210 (16)
Fall: EECE 441 (38) and EECE 684E (23)
Spring: EECE 210 (40) and EECE 685 (25)

A. Chehab
Summer: EECE 320 (40)
Fall: EECE 230 (47) and EECE 320 (57)
Spring: EECE 230 (47) and EECE 624 (22)

Z. Dawy
Fall: EECE 545 (55)
Spring: EECE 645 (51)

H. Diab
Summer: EECE 609 (7)
Fall: On Leave
Spring: On Leave

A. El-Hajj
Summer: EECE 230 (20)
Fall: EECE 230 (39) and EECE 430 (6)
Spring: EECE 230 (40) and EECE 667 (4)

L. Jalloul
Fall: EECE 440 (57)
Spring: EECE 442 (108)

K. Kabalan
Summer: EECE 440 (33)
Fall: EECE 440 (27) and EECE 674 (14)
Spring: EECE 440 (50)

S. Karaki
Fall: EECE 230 (43) and EECE 471 (37)
Spring: EECE 210C (30) and EECE 473 (25)

F. Karamel
Fall: EECE 210 (37) and EECE 440 (26)
Spring: EECE 440 (44) and EECE 603S (11)

A. Kayssi
Summer: EECE 310 (31)
Fall: EECE 310 (45)
Spring: EECE 430 (40)

W. Noureddine
Spring: EECE 430 (50)

M. Mansour
Fall: EECE 320 (40) and EECE 684S (6)
Spring: EECE 321 (39) and EECE 412/612 (21)

F. Mrad
Fall: EECE 460 (52) and EECE 6305 (22)
Spring: EECE 460 (93) and EECE 6375/ME 641 (20)

J. Saade
Fall: EECE 660C (5) and EECE 664C (12)
Spring: EECE 440 (26) and EECE 442 (34)
Coordinator of the Final Year Project
N. Sabah
Fall: EECE 310 (37) and EECE 6015 (22)
Spring: EECE 21040, EECE 401 (8), and EECS 6025 (6)

M. Saghir
Fall: EECE 421 (94) and EECE 657 (18)
Spring: EECE 321 (93)

OTHER ACTIVITIES

III. FULL-TIME FACULTY TEACHING, RESEARCH AND OTHER ACTIVITIES

N. Sabah
Fall: EECE 310 (37) and EECE 6015 (22)
Spring: EECE 21040, EECE 401 (8), and EECS 6025 (6)

M. Saghir
Fall: EECE 421 (94) and EECE 657 (18)
Spring: EECE 321 (93)

GRANTS

University Research Board (URB) Research and Travel Grants
July 2004–September 2005

I. Abou Fycaal
Optical Regeneration for Binary Signaling ($6,500)
Attended ICC'04 in Paris and presented two papers (June/July 2004)

M. A. Al-Alaoui
Novel IIR Differentiators ($4,500)
Visited UCLA Adaptive Systems Laboratory (Sept 1-Sept 15, 2004)

W. Ali-Ahmad
An Overview of Mobile Radios RF System Architectures ($6,000)
Presented at the RFID Symposium (June 10–15, 2005)

H. Artail, A. Chehab, and A. Kayssi
Mobile Agent Frameworks for Enhanced Security and Wireless Device Support ($13,000)

H. Artail
Visited the École Polytechnique de Montréal (July 1, 2004–August 30, 2005)

L. Bazzi
Minimum Distance of Error Correcting Codes versus Encoding Complexity, Symmetry, and Pseudorandomness ($5,500)

F. Chaaban
Assessment and Environmental Management of PCBs in the Power Industry ($4,000)

R. Chedid
Cost Benefit Analysis of Natural Gas Utilization in the Electricity Sector of Lebanon ($4,500)

Z. Dawy
Linkage Disequilibrium using Independent Component Analysis ($5,800)
Attended the IEEE International Conference on Communications (ICC’05) in Seoul, South Korea

A. El-Hajj and K.Y. Kabalan
Attended the 2004 International Conference on Electrical, Electronic and Computer Engineering (ICEEC’04), September 5–7, 2004, in Cairo, Egypt

A. El Hajj
Low-Sidelobe Adjustable-Beamwidth Planar Arrays ($5,500)

L. Jalloul
Signal Processing Techniques for the Enhancements of Third Generation Wireless Communication Receivers ($6,150)
Visited Stanford University (June 2005)

K. Kabalan
Uniform Circular Arrays with Modified-Chebyshev and Bessel Patterns ($5,500)
Attended the Second Mediterranean Seminar on Engineering Education in Algiers, Algeria, May 29–31, 2005

S. Karaki
Unit Commitment Problem Using Lagrangian Relaxation and Evolutionary Programming, in collaboration with Dr. K. Hindi ($6,000)

F. Karameh
Experimental Testing of the Neurophysiological Bases of Oscillatory Cortical Dynamics ($4,000)

A. Kayssi
Attended the 16th International Conference on Microelectronics, ICM 2004, December 6–8, 2004, Tunis, Tunisia

M. Mansour
High-Performance Decoders for Regular and Irregular Repeat-Accumulate Codes ($3,000)
Attended the Global Telecommunications Conference

F. Mrad
Attended and presented a paper at the IEEE 2005 Mediterranean Conference on Control in Cyprus

M. Saghir
Custom Instruction Generation for Reconfigurable Functional Units in Application-Specific Programmable Processors ($5,500)

Attended and presented a poster at the Workshop on Architecture Research using FPGA Platforms held in conjunction with the IEEE International Symposium on High-Performance Computer Architecture, in San Francisco, February 12–16, 2005

External Grants

Tempus Project: Collaborative IT Program for Education and Research, 2004–07 ($494,000)

F. Chaaban
Low-Sidelobe Adjustable Beamwidth Planar Arrays ($25,000)

S. Karaki and F. Mrad
NSF–USA
Maximum Solar Power Tracker, March 2005 to December 2005, in collaboration with University of Central Florida ($15,000)

S. Karaki, R. Chedid, F. Chaaban, and T. Mezher
Global Network on Energy for Sustainable Development
Energy Access I and II: Sustainable Services for the Poor in Jordan, Lebanon, and Syria, January 2005 ($25,000)

A. Kayssi
National Instruments
OFDM Toolkit, January–June 2005 ($3,000)

M. Mansour
Lebanese National Council for Scientific Research (LNC SR)

F. Mrad
National Instruments
Developing LabVIEW Simulation Examples for the Control Textbook of Ogata, July to December 2004 ($15,000)

PUBLICATIONS

Books and Book Chapters


Journal Papers

I. Abou-Faycal, M. Medard and U. Madhow

H. Artail

H. Artail

H. Artail and F. Hassan

H. Artail, H. Asadi, W. Koleilat, and A. Chehab

L. Bazzi, T. Richardson and R. Urbanke

L. Bazzi and S. Mitter

A. Chehab, A. El-Hajj, M. Al-Husseini, and H. Artail

A. Chehab, S. Hanna, K.Y. Kabalan, and A. El-Hajj

H. Diab and J.J. Saade

H. Diab

A. El-Hajj, K.Y. Kabalan, and M. Al-Husseini

A. El-Hajj, S. Karaki, M. Al-Husseini, and K.Y. Kabalan

A. El-Hajj, K.Y. Kabalan, and S. Khoury

M. Ohannessian, K.Y. Kabalan, and A. El-Hajj

M. Khoury, K.Y. Kabalan, Z. Achi, Z. Barbic, and S. Salam

S. Karaki, F. Chaaban, R. Chehad, T. Mezher, A. Hamzeh, A. Harf, F. Abdulla, and A. R. Yahia

S. Karaki, A. Kayssi, and H. Karakii

W. Itani and A. Kayssi

A. Kayssi

A. Kayssi, S. Sharafeddine, and H. Karaki

M.M. Mansour and Naresh R. Shanbhag

J.J. Saade and M. Al-Khatib

H. Safa, H. Artail, A. Mehio, H. Zahr, and Z. Matragi
"Improving Location Management in Mobile IPv4 Networks," in Proc. 3rd World Enformatika Conference (WEC’05), Istanbul, Turkey, April 2005.

H. Diya, H. Artail, and H. Safa

A. Alwani, H. Artail, H. Safa, A. Abi Abdallah, B. Basha, and T. Abdel Khalek

M. Eid, H. Artail, A. Chehab, and A. Kayssi

I. Kuwatly, M. Sraji, Z. Al-Masri, and H. Artail

F. Chaaban

Conference Papers

I. Abou-Faycal and R. Madaysha

L. El-Affifi, M. Karaki, J. Korban, and M. A. Al-Alaoui

M. Shouman, H. Safa, and H. Artail

H. Safa, H. Artail, A. Mehio, H. Zahr, and Z. Matragi
"Improving Location Management in Mobile IPv4 Networks," in Proc. 3rd World Enformatika Conference (WEC’05), Istanbul, Turkey, April 2005.

H. Diya, H. Artail, and H. Safa

A. Alwani, H. Artail, H. Safa, A. Abi Abdallah, B. Basha, and T. Abdel Khalek

M. Eid, H. Artail, A. Chehab, and A. Kayssi

I. Kuwatly, M. Sraji, Z. Al-Masri, and H. Artail

F. Chaaban
III. FULL-TIME FACULTY TEACHING, RESEARCH AND OTHER ACTIVITIES

R. Chedid, S. Karaki and A. Rifai

R. Gharaj and R. Chedid

R. Chedid, N. Ghaddar, F. Chaaban, M. Fadel, T. Mezher, and F. Moukalled

S. Hanna, A. Chehab, A. Kayssi, and H. Artail

A. Nazer, A. Chehab, A. Kayssi, and R. Makki

S. Kumar, S. Thomas, R. Makki, A. Chehab and A. Kayssi

A. Chehab, S. Hanna, K. Y. Kabalan and A. El-Hajj

A. Chehab, A. Kayssi, A. Nazer, and N. Aaraj

N. Aaraj, A. Nazer, A. Chehab, and A. Kayssi

S. Sharafedine and Z. Dawy

M. Sarkis, Z. Dawy, J. Hagenauer, and J. C. Mueller

Z. Dawy, J. Hagenauer, P. Hanus, and J. C. Mueller
“Mutual Information Based Distance Measures for Classification and Content Recognition with Applications to Genetics,” in Proc. IEEE International Conference on Communications (ICC 2005), Seoul, Korea, May 2005.

B. Goebel, Z. Dawy, J. Hagenauer, and J. C. Mueller

Z. Dawy, F. Gonzalez, J. Hagenauer, and J. C. Mueller

Z. Dawy, M. Sarkis, J. Hagenauer, and J. C. Mueller

Z. Dawy

Z. Dawy, S. Jaranakaran, and S. Sharafedine

S. Sharafedine, N. Kongtong, and Z. Dawy

S. Sharafedine and Z. Dawy

J. Hagenauer, Z. Dawy, B. Goebel, P. Hanus, and J. C. Mueller

Z. Itani, H. Diab, and H. Artail

M. Itani and H. Diab

H. Diab and M. Itani

H. Diab and M. Al Khaled

G. Derbas, A. Kayssi, H. Artail, and A. Chehab

T. Hassan, A. Kayssi, and A. Chehab

S. Itani, N. Aaraj, D. Abdelahad, and A. Kayssi

K.Y. Kabalan, A. El-Hajj, and F. Elias

E. Hujjer, S. Karaki, and J. Malkoun

F. Karameh and S. Mazaquoi
M. M. Mansour
"Design of Repeat-Accumulate codes from graphs with large girth," in Proc. 39th Annual Conference on Information Sciences and Systems (CISS’05), Johns Hopkins University, Baltimore, Maryland, Mar. 2005.

M. M. Mansour

M. M. Mansour

F. Mrad, S. Dandach, S. Azar, and G. Deeb

B. Alawi and F. Mrad

W. Noureddine

L. Bazzi
Advisor for the CCE class of 2007
Member, ad hoc Software Committee

F. Chaaban
Member, EUG
Member, FEA Student Conference Committee
Member, AUB Inter-Faculty Financial Aid Committee
Chairman, AUB Recycling Project Committee
Chairman, Local Organizing Committee of the ACS/IEEE International Conference on Pervasive Services, Beirut, July 19–23, 2004
Founding member, Lebanese Appropriate Technologies Association," Beirut
The Scientific Committee of the ‘Association of Friends of Abdul A’F
Public lectures on recycling activities in several regions in the country
Consultant for ESCWA, UNIDO and UNEP

A. Fares, A. Khachan, A. Bakri Kasbah, M. Zeidan, and A. Kayssi

R. Chehid
Advisor for graduate students
Member, FYP Committee
Member, EGC
Coordinator, Energy Research Group
Member, University Publication Committee
Member of the board of directors of the Lebanese Electric Utility, EEL
Consultant for ESCWA and Dhofer University

L. Jailou
Member, EUG
Member, Strategic Planning Committee for the University Libraries
Consultant for Infineon Technologies Inc.

K. Kabalan
Advisor for EE, Class of 2008
Member, Faculty Graduate Studies Committee
Member, EGC
Chairman, Department Communications Committee
Member, Department Final Year Project Committee
Coordinator, ABET Committee

A. Kayssi
Chairman, ECE Department
Chair, EUG
Chair, EGC
Member, ad hoc Software Committee
Member, ad hoc Communications Committee
Member, ad hoc Recruiting Committee
Member, Administrative Committee
Member, Academic and Curriculum Committee
Member, FEA Strategic Planning Chair, IT Strategic Planning Committee
Member, Unified Admissions Committee
Member, FEA Advisory Committee
Member, University Board of Graduate Studies
Member, International Program Committee (IPC) for the IASTED International Conference on Applied Simulation and Modeling (ASM 2005), September 3–5, 2003, Marbella, Spain.

A. El Hajj
Advisor for fourth year, EE class of 2005
Chair, Software Committee
Member, Academic and Curriculum Committee
Member, Website Committee
Member, Academic Development Committee
Member, IASTED technical committee
Member, International Program Committee (IPC) for the IASTED International Conference on Applied Simulation and Modelling (ASM 2005), June 28–30, 2004, Rhodes, Greece.
Member, International Program Committee (IPC) for the IASTED International Conference on Applied Simulation and Modelling (ASM 2005), June 28–30, 2004, Beirut, Lebanon.

A. Fares, A. Khachan, A. Bakri Kasbah, M. Zeidan, and A. Kayssi
OTHER ACTIVITIES

III. FULL-TIME FACULTY TEACHING, RESEARCH AND OTHER ACTIVITIES

M. Mansour
Graduate advisor and member of the ECE Graduate Committee
Member, ad hoc ECE Graduate Committee
Member, ad hoc ECE Curriculum Committee
Secretary of ECE Department
Member, FEA Student Affairs Committee
Program Committee: SiPS 2004, SiPS 2005, Globecom 2005, VTC Fall 2005

W. Noureddine
Consultant for International College
Member, Ericsson-AUB Steering Committee
Member, ECE Fiber optics committee for the recruitment of faculty applicants
Member, FEA Student Conference Committee

N. Sabah
Advisor: Biomedical Engineering Minor
Chair, Committee on Electric Circuits
Committee on Biomedical Engineering Minor

M. Saghir
Advisor for the CCE class of 2005
Member, Ad hoc Software Committee
Member, IT Minor Committee
Starting an IEEE Computer Society chapter in Lebanon

F. Mrad
Advisor for EE class of 2007
Student Club Advisor: Freedom Club
FYP ad hoc committee
Member, FEA Strategic Planning Committee
Member, Student Affairs committee
Member, AUB Senate
Member, AUB Student Election Committee
Member, University Standing Senate Committee on Students Affairs
Reviewer, National Science, Innovation, & Technology Policy proposed by the National Council for Scientific Research (NCSC), March 2005
Member, International Program Committee and Associated Editor for the 13th IEEE Mediterranean Conference on Control and Automation (MED-05), Cyprus, June 2005
Advisor, LIRA administration committee with the Association of Lebanese Industrialists
Advisor, Indevco Foundation community educational assistance program and other community development activities
Ministry of Industry- Republic of Lebanon: Technical Advisor to the Minister, May–June 2005

W. Noureddine
Consultant for Chelsio Communications

J. Saade
Coordinated the FYP
Member, ECE Communications Committee
Member, ECE Fiber optics committee for the recruitment of faculty applicants
Member, FEA Student Conference Committee

IV. ACADEMICS

PHD PROGRAM

The ECE department seeks to start a PhD program leading to the degree of Doctor of Philosophy in Electrical and Computer Engineering. The ECE department is particularly qualified to start the proposed PhD program due to the caliber of students that it attracts, the qualifications of the ECE faculty members, and the resources available in the department, in the Faculty of Engineering and Architecture (FEA), and at the university.

The need for qualified and highly trained PhD graduates in electrical and computer engineering is being felt by the increasing number of inquiries that have been received by the department over the past years; the increase in the number of graduate students in the masters programs; the increase in the number of institutions of higher-learning; and the need for qualified PhD holders to support the education and research requirements in Lebanon and the region. The proposed PhD program would therefore provide needed services to Lebanon, the region, and globally.

Moreover, the PhD program would help in attracting and retaining highly-qualified faculty members to the ECE department who would perform world-class research. It would also impact favorably on the ECE undergraduate and masters programs by giving students added opportunities to participate in more meaningful research, especially in their final-year projects and masters theses. The overall research atmosphere in ECE and FEA would be greatly enhanced by the proposed PhD program. Additionally, PhD students would contribute to enhancing undergraduate teaching in the department by offering more lectures, recitation sessions, and supervising laboratories.

The objectives of the proposed PhD program in the ECE department are to:

1. Provide the graduate with profound knowledge of a specialization area in electrical and computer engineering and familiarity with allied areas.
2. Provide the graduate with competence in performing independent research, in communicating effectively, and in learning independently.
3. Advance the state of research at AUB, in Lebanon, and the region.
4. Advance the state of the art in electrical and computer engineering.

The PhD program is proposed to start in the ECE department with the following areas of concentration that reflect current faculty expertise:

1. Communications and Electromagnetic Systems
2. Control, Biomedical, and Intelligent Systems
3. Computer and Software Systems
4. Electrical Energy Systems
5. VLSI and Signal Processing

ABET ACCREDITATION OF UNDERGRADUATE PROGRAMS

The following mission statement and program educational objectives were adopted by the ECE department for its undergraduate programs.

Mission Statement

The mission of the undergraduate programs is to impart a basic understanding of electrical and computer engineering built on a foundation of mathematics, physical sciences, and technology; to expose students to practical and major design experiences; and to provide students with a global perspective and an awareness of their leadership role in regional development. This preparation is augmented by the liberal arts education offered to all undergraduates at the American University of Beirut.
The Electrical Engineering program provides the students with options to explore, and specialize in, one or more areas of electrical and computer engineering.

The Computer and Communications Engineering program prepares its graduates for careers and higher studies in information and communication technologies.

Program Educational Objectives

Graduates of the programs:
1. Possess skills and knowledge that qualify them for professional practice in electrical and computer engineering and for admission to reputable graduate programs.
2. Are capable of applying fundamental knowledge, appropriate mathematical principles and computing tools, critical thinking, and best practices in electrical and computer engineering analysis and design.
3. Are provided with an educational foundation that fosters creativity, teamwork, leadership, and communication skills, and prepares them for lifelong learning along diverse career paths.
4. Have an appreciation of technical, social, economic, environmental, ethical, and global aspects of engineering practice.

Courses Offered in the ECE Department

Summer Term 2004

Undergraduate Courses
- EECE 210 Electric Circuits
- EECE 310 Electronics I
- EECE 230 Computers and Programming
- EECE 320 Digital Systems Design
- EECE 440 Signals and Systems
- EECE 470 Electric Machinery
- EECE 500 Approved Experience

Graduate Courses
- EECE 609 Computer Graphics
- EECE 798 Introduction to Wireless Radio Communications
- EECE 799 Thesis

Fall Term 2004-05

Undergraduate Courses
- EECE 210 Electric Circuits
- EECE 230 Computers and Programming
- EECE 310 Electronics I
- EECE 320 Digital Systems Design
- EECE 330 Data Structures and Algorithms
- EECE 370 Electromechanical Systems
- EECE 421 Computer Architecture
- EECE 440 Signals and Systems
- EECE 443 Electrodynamics
- EECE 441 Electromagnetics
- EECE 460 Control Systems
- EECE 430 Software Engineering
- EECE 471 Fundamentals of Power Systems Analysis
- EECE 501 Final Year Project
- EECE 545 Wireless Communication
- EECE 570 Electric Drives
- EECE 571 Industrial Electrification
- ITEC 240 Computers and Communication Systems
- ITEC 241 Software Systems
- ITEC 242 Management Information Systems

Graduate Courses
- EECE 601S Biomedical Engineering I
- EECE 613C Reconfigurable Computing
- EECE 630S System Analysis and Design
- EECE 641 Information Theory
- EECE 641E Power System Planning
- EECE 642 Introduction to Coding Theory
- EECE 657 Optimizing Compilers
- EECE 660C Stochastic Processes, Detection and Estimation
- EECE 664C Fuzzy Sets, Logic and Applications
- EECE 674 Time-Harmonic Electromagnetic Fields
- EECE 679 Pervasive Computing
- EECE 684E Renewable Energy Systems
- EECE 684S Digital VLSI
- EECE 691C Digital Signal Processing
- EECE 798 Image and Video Compression
- EECE 798A Wireless Communication
- EECE 799 Thesis

Lab Courses
- EECE 310L Electric Circuits Lab
- EECE 420L Digital Systems Lab
- EECE 442L Communications Lab
- EECE 460L Control Systems Lab
- EECE 470L Electric Machines Lab
- EECE 473L Power Electronics and Drives Lab
- EECE 577L Internetworking Lab
Spring Term 2004–05

Undergraduate Courses

EECE 210 Electric Circuits
EECE 210C Electric Circuits and Electronics
EECE 210M Electric Circuits and Electronics
EECE 230 Computers and Programming
EECE 440 Signals and Systems
EECE 321 Computer Organization
EECE 330 Data Structures and Algorithms
EECE 442 Communication Systems
EECE 443 Electrodynamics
EECE 401 Biomedical Eng'g Seminar
EECE 412 Digital Integrated Circuits
EECE 450 Computer Networks
EECE 460 Control Systems
EECE 470 Electric Machinery
EECE 473 Power Electronics
EECE 502 Final Year Project
ITEC 240 Computers and Communication Systems
ITEC 242 Management Information Systems

Graduate Courses

EECE 6025 Biomedical Engineering II
EECE 6035 Biomedical Signal & Image Processing
EECE 612 Digital Integrated Circuits
EECE 624 Digital System Testing
EECE 6375 Robotics
EECE 643 RF & Microwave Communication Systems
EECE 645 The UMTS Cellular System
EECE 653 Database Systems
EECE 653C Advanced Topics in Algorithms
EECE 660C Stochastic Processes, Detection, and Estimation
EECE 667 Antenna Design
EECE 670C Queueing Theory
EECE 673C Neural Networks
EECE 685 Energy Planning & Policy
EECE 692 Environmental Aspects of Energy Systems
EECE 798 Special Topics
EECE 799 Seminar
EECE 799 Thesis

Lab Courses

EECE 420L Digital Systems Lab
EECE 460L Control Systems Lab
EECE 470L Electric Machines Lab
EECE 477L Power Electronics and Drives Lab
EECE 577L Internetworking Lab

Summer Training

Third-year ECE students did their technical training at various companies and universities, and in various countries. A list of students and where they did their training is shown below.

Computer and Communications Engineering Majors

Abdalli, Rami; University of Wisconsin; USA
Abra, Walid; Computer Business Machines; Lebanon
Abou-Majed, Mima; Ecole Polytechnique de Montréal, Canada
Aboum, Mazen; University of Oakland; USA
Abou-Saleh, Jamel; University of Waterloo; Canada
Abou-Zahar, Ahmad Badawi; IAESTE; Jordan
Addik, Antoine, Liberal Cables; Lebanon
Akoun, Salam; University of Utah; USA
Al-Haddad, Ramzi; BML Istrisharat; Lebanon
Al-Majid, Murad; Trilog; Lebanon
Alameh, Amael; Cable One; Lebanon
Alliein, Hady; University of Waterloo; Canada
Al-sayed, Abdul Hadi; Al Baheth Co; Jordan
Arab, Mounir; Clicks Limited; Lebanon
Azzam, Emad; Emiratis Computers; UAE
Baalbaki, Tarek; OGERO; Lebanon
Badji, Ahmad; Intermedic and Medtronic; Lebanon
Bechara, Mohamed; Royal Institute of Technology; Sweden
Bou Diab, Maya; Dar Al Handasah Shair; Lebanon
Bou Diab, Nabil; Clicks Limited; Lebanon
Bou-Saleh, Abdallah; University of Waterloo; Canada
Chaou, Joseph; MDS Holdings; Abu Dhabi; UAE
Chedid, Fady; Isher Woods; Newcastle; UK
Dabbous, Ali; OGERO; Lebanon
Daher, Rani; DLR (German Aerospace Center); Germany
Darwish, Abbas; OGERO; Lebanon
Darwish, Tarek; Fidus Systems; Lebanon
Dib, Diana, BML Istisharat; Lebanon
Dika, Ali; University of Oakland; USA
El-Chakhour, El-Haj, Mounir; OGERO; Lebanon
El-Houry, Zeinoun; OGERO; Lebanon
El-Mawas, Rami, University of California, Berkeley; USA
El-Nabbout, Natalie; University of Waterloo; Canada
El-Helou, Ralph; MUREX; Lebanon
El-Saadi, Mohammad; University of California, Berkeley; USA
Fayad, Joanna; University of California, Berkeley; USA
Fraynigeh, George; MTC Touch; Lebanon
Ghanem, George; University of California, Riverside; USA
Ghanem, Sameer; CMU; USA
Gharios, Nadim; Emiratis Computers; UAE
Ghossoub, Charles; BML Istisharat; Lebanon
Habachi, Ziad; Petrosa International; UAE
Haddada, Guy, Trilog, Lebanon
Haddidian, Arine; Dar Al Handasah Shair; Lebanon
Haidar, Reda Nouveau; UK
Hajjar, Abdellkarim; AW & Zender, Lebanon
Hajjar, Mazen; Royal Institute of Technology; Sweden
Hammond, Hassan; Wise Expert; Lebanon
Hanna-Elia, Georges; Veolia Water Systems; France
Hasna, Mohamed; BCT Network; Saudi Arabia
Hayek, Hussam; University of Waterloo; Canada
Hotait, Hamza; University of Waterloo; Canada
Issa, Mayssaa; Ericsson Dubai; UAE
Itani, Mariam; OGERO; Lebanon
Itani, Miriam; DLR (German Aerospace Center); Germany
Itani, Mona; Ecole Polytechnique de Montreal; Canada
Jaber, Rayyan; University of Waterloo; Canada
Kabbani, Sany; University of California, Berkeley; USA
Kassab, Ziad; CEC; Gulf
Khalaf, Wissam; University of California Riverside; USA
Khalifeh, Hasan; Royal Institute of Technology; Sweden
Khalil, Ali; Emiratis Computers; UAE
Khattab, Sameer; MAPS; Lebanon
Khoury, Sandy; Honeywell; UAE
Khoury, Souhail; Ericsson Dubai; UAE
Lahoud, Robin; CMU; USA
Maalef, Ramzi; Moscanel; Lebanon
Maatouk, Ghid; University of California, Berkeley; USA
Machmouchi, Widad; University of Waterloo; Canada
Madi, Ramzi; MUREX; Lebanon
Mikati, Bilal; CMU; USA
Mitri, Joelle; IAESTE, Yugoslavia; Yugoslavia
Moujalji, Jad; CCC; UAE
Moukarzel, Jean; Cisco Dubai; UAE
Najdi, Nahal; Primas Industries; Italy
Nasser, Marcel; University of California, Berkeley; USA
Naufal, Amin; Cedaron; Lebanon
Rachid, Mansour; IAESTE; Spain
Rayess, Ramzi; OGERO; Lebanon
Sahi, Tamam; Infineon; GERMANY
Saleh, Oliver; OGERO; Lebanon
Sawer, Bassem; Silicon Graphics; UAE
Shalhub, Else; MTC Touch; Lebanon
Shamseddine, Tarek; Avante Garde; Canada
Sharafedddeen, Samer; OGERO; Lebanon
Sleiman, Aciel; IAESTE; Tunisia
Slim, Hussein; University of Waterloo; Canada
Talbouche, Anis; University of Oakland, USA
Tager, Alan; Sita Communication; Lebanon
Tefekli, Fida; Honeywell; UAE
Tutunjian, Liza; MUREX; Lebanon
Wehbe, Bruno; Indevco; Lebanon
Yaghi, Haythem; Royal Institute of Technology; Sweden
Yamout, Ziad; MAPS/IG; Holland

Electrical Engineering Majors
Abi-Nassif, Jad; General Electric; UAE
Abou Saleh, Hassan; Concordia University; Canada
Abu Daher, Walid; Hotel Dieu; Lebanon
Abu Raslan, Amal; MEA; Lebanon
Acar, Sameer; Terra Net; Lebanon
Alabar, Khalil; MEA; Lebanon
Al-bekai, Rima; Bazzi Medical; Lebanon
Allam, Jad; Petrofac International; UAE
Al-Mokadem, Reem; Khalbi & Alami; Lebanon
Alsalihi, Salem; University of Florida; USA
Amro, Ameen; Ecole Polytechnique de Montreal; Canada
Atme, Rami; Khalafi National; Kuwait
Atwi, Imad; Siemens Kettaneh; Lebanon
Azar, Jimmy; Intermedic; Lebanon
Azoury, Christian; CAT Group; Gulf
Bazzi, Ali; MID MAC; Qatar
Berbari, Kamal; Teletare; Lebanon
Bou Ghanam, Adham; CCC; Gulf
Chabaklo, Ahmad; MEA; Lebanon
Charafeddine, Farah; EDL; Lebanon
Darwish, Mohamad; CAT Group; Gulf
Eid, Camille; Siemens Lebanon; Lebanon
El Khoury, Ramzi; Dar Al Handasah; Lebanon
El-kodsi, George; MAPCO; UAE
Farah, Ibrahim; Syrian Telecom; Syria
Fares, Dima; Dar Al Handasah Shair; Lebanon
Fares, Jackie; APWFE; France
Frejeh, Tarek; Prima Industries; Italy
Ghourayssi, Rabih; IAESTE; Egypt
Haddad, Nadim; Ansaldo Energia; Italy
Hajo, Hussein; University of Toronto; Canada
Hariri, Nour; CMU; USA
Ibrahim, Nizar; Khalafi National; Kuwait
Ismail, Ismail; IBM Cairo; Egypt
Kansou, Karim; MAPCO; UAE
Maarouf, Ahmad; Petrofac International; UAE
Mahdi Kassis, Mohamad; OGERO; Lebanon
Makkki, Hussein; University of Florida; USA
Mina, Tony; Schlumberger; Saudi Arabia
Nakhil, Bassem; OGERO; Lebanon
Neamani, Dana; MTC Touch; Lebanon
Omari, Khalid; Saudi Intelek Com; Saudi Arabia
Raid, Joseph; Petrofac International; UAE
Saade, Rizk; OGERO; Lebanon
Eid, Mohamed; Saudia Oger; Saudi Arabia
El Khoury, Ramzi; Dar Al Handasah; Lebanon
El-kodsi, George; MAPCO; UAE
Farah, Ibrahim; Syrian Telecom; Syria
Fares, Dima; Dar Al Handasah Shair; Lebanon
Fares, Jackie; APWFE; France
Frejeh, Tarek; Prima Industries; Italy
Ghourayssi, Rabih; IAESTE; Egypt
Haddad, Nadim; Ansaldo Energia; Italy
Hajo, Hussein; University of Toronto; Canada
Hariri, Nour; CMU; USA
Ibrahim, Nizar; Khalafi National; Kuwait
Ismail, Ismail; IBM Cairo; Egypt
Kansou, Karim; MAPCO; UAE
Maarouf, Ahmad; Petrofac International; UAE
Mahdi Kassis, Mohamad; OGERO; Lebanon
Makkki, Hussein; University of Florida; USA
Mina, Tony; Schlumberger; Saudi Arabia
Nakhil, Bassem; OGERO; Lebanon
Neamani, Dana; MTC Touch; Lebanon
Omari, Khalid; Saudi Intelek Com; Saudi Arabia
Raid, Joseph; Petrofac International; UAE
Saade, Rizk; OGERO; Lebanon

Yamout, Hicham; Arab Web Company; Lebanon
Sweden
Wehbe, Bruno; Indevco; Lebanon
Tutunjian, Liza; MUREX; Lebanon
Wehbe, Bruno; Indevco, Lebanon
Yaghi, Haythem; Royal Institute of Technology; Sweden
Yamout, Ziad; MAPS/IG; Holland

Final Year Projects
The ECE fourth-year students worked in groups on various final year projects. Following is a list of the project titles, supervisors and students who worked on them, including their majors:

Real Time Gaming Over UMTS
Students: Hussein Rida (CCE), Mustapha Makkooh (CCE), Masihour sofie (CCE)
Supervisors: Prof. Zaher Dawy and Louay Jalil

Multiphase Based Cellular Networks
Students: Sami Ayasii (CCE), Marc Ali (CCE), Sami Abu Saab (CCE)
Supervisor: Prof. Zaher Dawy

On Campus Telecommunications: A Mobile Solution
Students: Leila El Aawar (CCE), Zahy Abu Atme (EE), Nabil Suliman (CCE)
Supervisor: Prof. Zaher Dawy

Modeling and Simulation of a Hybrid Renewable Energy System Based on Hydrogen Storage
Students: Jean-Yves Farran (EE), Tarek Atallah (EE), Mohammed El-Khayati (EE)
Supervisor: Prof. Riad Chedid

A Simulation-Optimization Environment for Designing Hybrid Renewable Energy Systems for Supplying Electricity and Fresh Water through Desalination to Remote Areas
Students: Marc Daoud (EE), Michael Cherfan (EE), Elias Webba (CCE)
Supervisor: Prof. Riad Chedid

Floating-Point Extensions to the Xilinx MicroBlaze Instruction Set Architecture
Students: Siba Harb (CCE), Maroula Haddad (EE), Nabila Suliman (CCE)
Supervisor: Prof. Riad Chedid

Data Path Generator for VLIW Architecture
Students: Patrick Ali (CCE), Mohammad El-Majzoub (CCE)
Supervisor: Prof. Mazen Saghiri

e-Broker
Students: Hratch Mangassarian (CCE), Harold Haddad (EE), Vatche Koujieian (CCE)
Supervisor: Prof. Hassan Artail

Distributed Computing on PDA's
Students: Eliau Ee (EE), Elissa Chalouhi (CCE), Karine Madi (EE)
Supervisor: Prof. Hassan Artail

Service Management Node Election in Mobile Ad-Hoc Networks
Students: Leon Lahoud (CCE), Gabriel Habre (CCE), Salm Al Halabi (EE)
Supervisor: Prof. Hassan Artail

Five Fighting Autonomous Robot (F2R)
Students: Mackram Raydan (CCE), Bissan Ghaddar (CCE), Loulou Elazar (EE)
Supervisor: Prof. Fouad Mard

Search and Rescue Snake Robot (SRSR)
Students: Jean Fares (EE), Youssef Frem (CCE), Halaw Layya (CCE)
Supervisor: Prof. Fouad Mard

CAD-CAM : PCB Drill
Students: Firas Smaa (EE), Elie Malhame (EE), Rana Zoghib (EE)
Supervisor: Prof. Mard

Hand Gesture Recognition System
Students: Sami Khawam (EE), Joe Naoom-Sawaya (CCE), Mazen Slim (EE)
Supervisor: Prof. M. Adnan Al-Alaou

ALIT Adult Literacy using IT
Students: Christine Al (EE), Ralph El-Kady (EE), Rita Naff (EE)
Supervisor: Prof. M. Adnan Al-Alaou

Electronic Stethoscope
Students: Saimar Abdallah (CCE), Caroline Sabbagh (CCE), Rasha Rashidi (CCE)
Supervisor: Prof. Nasir Sabah

Computer Animation-Illustration of Basic Topics in Electronics and Circuits
Students: Joy Fernainy (CCE), Chamoun Kallas (CCE), Ahmad El-Chidiac (EE)
Supervisor: Prof. Nasir Sabah

Transformer and Synchronous Machine Testing Station
Students: Mohammad Salloum (EE), Layla Khoury (EE), Krystel Haddad (EE)
Supervisor: Prof. Sami Karaki

PV Cell Optimal Battery Charger
Students: Adnan Haidar (EE), Mazen Hamed (EE), Hiliaa Saad (EE)
Supervisor: Prof. Sami Karaki
IV. ACADEMICS

Supervisor: Prof. Walid Ali-Ahmad

Students: Hassan Akhras (EE), Rawan Naous (EE), Sleiman Haidar (EE)

Remote Lab Experiments

Supervisor: Prof. Ali El-Hajj

Students: Elias Mounayer (CCE), Imad Jabbour (CCE), Ousama Rawas (CCE)

Web Awareness Agent

Supervisor: Prof. Farid Chaaban

Students: Habib Aoun (CCE), Ramzi El-Kadi (EE), Ramzi Khoury (EE)

Music Suite

Supervisor: Prof. Ali Chehab and Samer Abdallah

Students: Elie Sarrouf-Maalouf (EE), Hussein Lakiss (EE), Bader Al-Jawad (EE)

Single-phase, Three-phase AC Power Controller

Supervisors: Profs. Ali Chehab and Samer Abdallah

Students: Bernard Ghanem (CCE), Wissam Kazan (CCE), Adnan Al-Alaoui

Image-To-Sound Vision Device For the Blind

Supervisor: Prof. Hazem Chahine

Students: Manal Issa-El-Khoury (EE), Rabih Kabrit (EE), Naji Mounsef, supervised by Professor Abou Faycal

E-Nurse

Supervisor: Prof. Karim Kabalan

Students: Vlado Yazigi (EE), Toufic Khoury (CCE), Nader Tfaili (EE)

Payment through the cellular

Supervisors: Prof. Karim Kabalan

Students: Yazane Alayfi (EE), Omar Itani (EE), Majd Jamaeldine (EE)

GRADUATE THESES

Master of Engineering Theses in

Progress

Naj Mounef, supervised by Professor Abou Faycal

Roula Eid, supervised by Professor Mrad

Mohammad Mortada, supervised by Professor Mrad

Mansour Mansour, supervised by Professor Mrad

Rana Shihab, supervised by Professor Mrad

Amine Aoua-Akass, supervised by Professor Mrad

Alaa Dalghan, supervised by Professor Chehab

Anis Nazer, supervised by Professor Chehab

Elias Yaacoub, supervised by Professor Chehab

Adham Atallah, supervised by Professor Artail

Naji Mounsef, supervised by Professor Abou Faycal

Rula Antoun, supervised by Professor Artail

Rula Eid, supervised by Professor Al-Alaoui

Roula Eid, supervised by Professor Abou Faycal

Rana Shihab, supervised by Professor Artail

Anas Idris, Compact SQL for MANETS, (June 2005), supervised by Professor Artail

Ziad Itani, Data conflict resolution for mobile devices, (February 2005), supervised by Professor Diab


Ghayyas Tohme, Measurement and Modeling of the Magnetic Field in the Power Network, (February 2005), supervised by Professor Chaaban

Master of Engineering Theses

IV. ACADEMICS
V. DEPARTMENTAL ACTIVITIES

BUDGETS

Major Equipment
Communications Lab 86,210 USD
DSP Lab 40,490 USD
CNC Drill 16,000 USD
Digital Systems Lab 12,150 USD

ASHA
RF Lab 90,000 USD

Minor Equipment, Supplies, etc.
38,250 USD

Student Work
15,000 USD

Software
30,000 USD

COLLABORATIVE AGREEMENTS

Ecole Polytechnique de Montréal
A cooperation agreement was signed with the Ecole Polytechnique de Montréal in the areas of biomedical engineering and electrical and computer engineering for the exchange of students and faculty members.

Munich University of Technology (TUM)
An agreement of partnership was signed with the TUM Department of Electrical Engineering and Information Technology and covers the exchange of students and academic staff in addition to research collaboration.

Ericsson Lebanon
A cooperation agreement was signed with Ericsson Lebanon covering student training, support of final-year projects and other R&D activities in addition to presentations and seminars.

PlanetLab
The ECE department joined the PlanetLab Consortium. PlanetLab defines itself as “an overlay network of computational services and an open global test bed for developing new internet technologies.”

MEETINGS

ABET Meetings
Five ABET ECE meetings were held during Spring 2005. The agenda items of those meetings were as follows:

• February 17, 2005: Mission and objectives; ABET processes (every term; every year; every three years); Committees (ECE Student Advisory Committee, Cognizant Faculty Groups, FYP Committee, Approved Experience Committee).
• February 24, 2005: Mission and objectives; ABET processes; Committees (ECE Student Advisory Committee, Cognizant Faculty Groups, FYP Committee, Approved Experience Committee).
• March 24, 2005: Cognizant faculty list; Course self-assessment; ECE Student Advisory Committee; Program outcomes for EE and CCE; CV in ABET format; Course syllabi; Correlation tables.
• March 31, 2005: Cognizant faculty list; Course self-assessment; ECE Student Advisory Committee; Program outcomes for EE and CCE; CV in ABET format; Course syllabi; Correlation tables.
• May 19, 2005: Special ABET meeting with Professor Armali.

ECM Meetings
Twelve regular departmental meetings and six special meetings were held during academic year 2004–05. Following were the agenda items of those meetings.

- September 30, 2004: Welcoming new faculty members; Election of new secretary; Announcements.
- October 14, 2004: Special Meeting: FYP Guidelines.
- October 28, 2004: Announcements (Equipment proposal, Course plan for next two years, Course outcomes; Course files, Meeting with advisees, ECE areas, EECE 440 offering in Spring 2004–05); Program objectives and ECE Strategic plan; GRE requirement for applicants to graduate programs.
- November 25, 2004: Announcements; New course proposals; Part-time applicants; Non-thesis option.
- December 16, 2004: Announcements; FYP grading; New courses; Non-thesis option.
- January 6, 2005: Announcements; FYP grading; New courses; Non-thesis option.
- January 19, 2005: Special Meeting: Distinguished alumni.
- February 3, 2005: Proposal for PhD and Visit of Evaluators; ABET Objectives and Processes; ABET Student Advisory Committee; Extension of Leave for Professor Hassan Diab.
- March 10, 2005: Announcements; ABET processes.
- March 22, 2005: Special Meeting
- April 14, 2005: Announcements; Visiting appointments (Professors: Javed Khan and Brian Evans); Modified FYP Guidelines; Course proposals (EECE 330 and EECE 503).
- May 12, 2005: Announcements; Course proposals (EECE 330, 480, 668, and 503); Modified FYP guidelines.
- May 26, 2005: Special Meeting: Renewal of contracts.
- June 8, 2005: Dean’s Award For Creative Achievement; Distinguished Graduate Award; Debs Award; List of graduates for Spring 2005.
- June 9, 2005: Announcements; ABET issues, Faculty applicants; New courses; New members on External Advisory Board.
- June 16, 2005: Distinguished Graduate Award for CCE; New courses.
- June 21, 2005: Special Meeting: Voting on Degrees.

EAB Meeting
Agenda of the meeting of the External Advisory Board on June 29, 2005: State of the ECE Department; PhD program in ECE; Accreditation of the undergraduate programs; Job opportunities; Strategic Planning; Other business.

SEMINARS

The ECE department organized 25 technical seminars during the period July 1, 2004–June 30, 2005.

1. Impact of Network Transformation, Dr. Cheri Feinman, Nortel Networks, July 14, 2004
2. Dynamic Safety Margin Principle and Application in Control of Safety Critical Systems, Professor Essam Badreddin, University of Mannheim in Germany, September 23, 2004
3. Optical Communication: Switching and Topology Impairments, Mr. Sami Sheeshia, Electronic Data System, October 12, 2004
4. Overview of Technology and Development at PXIT, Mr. Fadi Daou, PXIT Inc., October 12, 2004
5. Blackouts and Load Restoration in Electrical Power Transmission Systems, Dr. Mohamad Khaled, Alstom Power, Switzerland, October 13, 2004
6. The Coming of Age of Reconfigurable Computing, Professor Fadi Kurdahi, University of California, Irvine, December 15, 2004
7. Local Information-Based Routing/ Broadcasting in Ad Hoc Wireless Networks, Professor Jie Wu, Florida Atlantic University, December 30, 2004
9. Software in the Loop (SIL) as Implemented for the G2TE Automatic Transmission, Dr. Ali Mortada, DaimlerChrysler Corporation, January 5, 2005
10. Design and Performance of Adaptive Systems Based on Biologically-Inspired Optimization, Professor W. Kenneth Jenkins, Pennsylvania State University, February 21, 2005
11. The Pairwise Approach to Design and Analysis of Distributed Systems, Professor Paul Artie, College of Computer and Information Science, Northeastern University, March 3, 2005
12. Communication Engineering for Human Genetics, Dr. Zaher Dawy, AUB, March 3, 2005
13. Towards High Performance System-On-Chip Design Automation, Dr. Yehia Massoud, Rice University, March 10, 2005
14. Cross-Layer Optimization for Mobile Multimedia Communication, Professor Dr.-Ing. Eckehard Steinbach, Munich University of Technology (TUM), March 15, 2005
15. In Pursuit of Interference Free Wireless Communication, Professor Lujos Hanzo, University of Southampton (UK), March 15, 2005
16. Engineers in Multinational Company: Challenges and Chances, Dr. Frank Stefan Becker, Siemens AG, Munich, March 16, 2005
17. The Master of Science in Communication Engineering (MSCE) Program, Professor Dr.-Ing. Joachim Hagenauser, Munich University of Technology (TUM), March 16, 2005
18. Dynamic Information Flow Analysis And Profiling, Professor Wassim Masri, AUB, March 17, 2005
19. Building End To End VoIP Service Provider in ONE Hour, Mr. Karim Charf, Xpilorum Inc., Beirut, March 31, 2005
20. UlRNA Design and RNA-RNA Interaction Algorithms, Dr. Saad Mneinneh, Southern Methodist University, April 7, 2005
21. Security and Mobility Management in the Embedded Internet, Professor Guy Pujolle, University of Paris VI, April 28, 2005
22. Broadband Internet in Lebanon Using xDSL Technologies, Dr. Toufic Chebaro, OGERO, May 4, 2005
23. Michigan: From EM to Nano, Professor Fawwaz Ulaby, The University of Michigan, May 12, 2005
24. Race-Free Resource Allocation For QoS Support in Wireless Networks, Mr. Imad Jawhari, Florida Atlantic University, May 17, 2005
25. Software Product Line Engineering, Mr. Rabih Bashroush, Queen's University Belfast (UK), May 31, 2005

AWARDS

The FEA Distinguished Alumnus Award
Professor Boutros T. Khuri-Yakub received the BS degree in 1970 from the American University of Beirut, the MS degree in 1972 from Dartmouth College, and the PhD degree in 1975 from Stanford University, all in electrical engineering. He joined the research staff at the E. L. Ginzton Laboratory of Stanford University in 1976 as a research associate. He was promoted to Senior Research Associate in 1978 and to Professor of Electrical Engineering in 1982. He has served on many university committees in the school of engineering and the department of electrical engineering. Presently, he is the co-chair of graduate admissions in the EE department at Stanford, and the deputy director of the E. L. Ginzton Laboratory. Professor Khuri-Yakub has been teaching both at the graduate and undergraduate levels, and his current research interests include medical imaging, micromachined ultrasonic transducers, smart bio-fluidic channels, microphones, in-situ acoustic sensors (IE: temperature, film thickness, resist cure) for monitoring and control of integrated circuits manufacturing processes, and fluid ejectors, and in the field of ultrasonic nondestructive evaluation and acoustic imaging and microscopy. Professor Khuri-Yakub is a fellow of the IEEE, a senior member of the Acoustical Society of America, and a member of Tau Beta Pi. He is associate editor of Research in Nondestructive Evaluation, a Journal of the American Society for Nondestructive Testing. Professor Khuri-Yakub has authored over 400 publications and has been principal inventor or co-inventor of 75 US and internationally issued patents. He received the Stanford University School of Engineering Distinguished Advisor Award, June 1987, the Medal of the City of Bordeaux for contributions to NDE, 1983, and the IEEE UFFC distinguished lecturer award, 1999–2000.

Mr. Simon Khalaf is president and CEO of Vernier Networks, a Silicon Valley California-based startup company focused on information technology security. As president and CEO, Mr. Khalaf’s vision is to create a security solution for wired and wireless networks that will assure business continuity for the enterprise. Mr. Khalaf has more than 15 years of experience in the high-tech industry and in-depth knowledge of IT security, enterprise software, and networking infrastructure. Mr. Khalaf has a strong career track record of successfully founding, launching and leading a variety of high-tech companies to initial public offerings and acquisition. Most recently, Mr. Khalaf led Connectus Management Group, a management consulting firm in the IT security space. Prior to that, he was president of Volera Corporation where he launched the company’s content delivery and security initiatives and positioned the company as the major contender in its industry. Mr. Khalaf’s other executive and founder positions include: vice president and general manager of Novell Inc; founder, president and CEO of Just On which was acquired by Novell, Inc.; and founder and VP of marketing of Worldtalk Corporation which went public in 1996 and was later acquired by Tumbleweed Communications. Mr. Khalaf holds a master’s degree in computer engineering from Syracuse University and a Bachelor of Engineering in Electrical Engineering from the American University of Beirut in 1988.

4th FEA Student Conference

Best Paper Submitted by CCE Undergraduate Students:
Sami Abou Saab, Marc Aki, Sami Arayssi
Multihop Based Cellular Networks

Best Paper Submitted by EE Undergraduate Students:
Ali Fawaz, Bernard Ghanem, Ghassan Karame
Autonomous Mobile Robot Navigation in Outdoor Environments

Dean’s Award for Creative Achievement
Marwa Abdel Baki, Joanna Fayad, Mansour Mansour, and Rosali Saba (CCE)
Digital Spell Checking Pen

Sara Khaddaj, Bilal Khaddaj, and Samah Halawi (EE)
Image-to-Sound Vision Device for the Blind

Distinguished Graduate Award
Antoine El Daher (CCE 2005)
Hamza Derbas (EE 2005)

Charfi S. Korban Award
Antoine El Daher, Bernard Ghanem, and Ghinwa Adra (CCE Undergraduate)
Salm El Rouwayheb (CCE Graduate)
VI. STUDENTS

ENROLLMENT AND STATISTICS

Undergraduate Students

A total of 617 undergraduate students were enrolled in the ECE department in both majors, Computer and Communications Engineering (CCE) and Electrical Engineering (EE), during the academic year 2004–05.

<table>
<thead>
<tr>
<th>Class of</th>
<th>CCE</th>
<th>EE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007 (First year)</td>
<td>91</td>
<td>81</td>
</tr>
<tr>
<td>2006 (Second year)</td>
<td>101</td>
<td>50</td>
</tr>
<tr>
<td>2005 (Third year)</td>
<td>100</td>
<td>55</td>
</tr>
<tr>
<td>2004 (Fourth year)</td>
<td>72</td>
<td>67</td>
</tr>
</tbody>
</table>

Student Employment

The ECE department had 83 students registered in the student work scholarship program during academic year 2004–05: 46 students in the fall term and 37 students in the spring term.

Graduate Students

<table>
<thead>
<tr>
<th>Term</th>
<th>CCE</th>
<th>EE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2004–05</td>
<td>70</td>
<td>19</td>
</tr>
<tr>
<td>Spring 2004–05</td>
<td>65</td>
<td>17</td>
</tr>
</tbody>
</table>

Graduate Assistants

<table>
<thead>
<tr>
<th>Term</th>
<th>No. of ECE Graduate Assistants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 2004</td>
<td>17</td>
</tr>
<tr>
<td>Fall 2004–05</td>
<td>62</td>
</tr>
<tr>
<td>Spring 2004–05</td>
<td>56</td>
</tr>
</tbody>
</table>