

Kamal Khuri-Makdisi
Extended Curriculum Vitae
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1 Contact Information

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2 Background

2.1 Education

- Ph.D. in Mathematics, Princeton University, November 1993. Advisor: Goro Shimura.
- Fulbright Scholar, University of Bonn, October 1988–July 1989. Attended graduate-level courses and seminars in the mathematics department.
- B.S. in Mathematics and Electrical Engineering (double major), summa cum laude, with distinction in both majors, Yale University, May 1988.

2.2 Work Experience

- October 1999–present: Full Professor (2009–), Associate Professor (2003–2009), Assistant Professor (1999–2003), Mathematics Department, American University of Beirut (AUB); also, Fellow, Center for Advanced Mathematical Sciences (CAMS), at AUB (1999–2012). On leave for three semesters, February 2021–August 2022, for long-term funded research stays at MPIM Bonn and IAS Princeton.
- February 2022–July 2022: Member, Institute for Advanced Study (IAS), Princeton, New Jersey.
- February 2021–January 2022: Visiting Scientist, Max Planck Institute for Mathematics, Bonn.
- Academic year 1998–1999: Postdoctoral Fellow, Mathematics Department, McGill University and CICMA (Centre interuniversitaire en calcul mathématique algébrique); jointly, Adjunct Assistant Professor, Mathematics Department, Concordia University.
- July 1993–June 1998: Benjamin Peirce Assistant Professor, Mathematics Department, Harvard University (on leave 1994–1995).
- Academic year 1994–1995: Member, School of Mathematics, Institute for Advanced Study (IAS), Princeton, New Jersey.
- 1987 (summer): Engineering Assistant, Computer-Aided Design group, Lawrence Livermore National Laboratory. Investigated methods to incorporate spare wires into wafer-scale integrated circuits, so as to allow circuits to be repaired in the presence of faulty wires.

3 Research

3.1 Research Interests in Mathematics

- Number theory, including algorithmic number theory; automorphic forms and representation theory.

3.2 Publications and preprints

- “An analog of the Edwards model for Jacobians of genus 2 curves,” joint with E. V. Flynn, *Research in Number Theory* 10 (2024), no. 2, paper no. 32, 41 pp., preprint available from <https://arxiv.org/abs/2211.01450>
- “Values of L-series of Hecke Eigenforms,” joint with W. Kohnen and W. Raji, *Journal of Number Theory* 211 (2020), 28–42, preprint <https://arxiv.org/abs/1904.04219>
- “Fake proofs for identities involving products of Eisenstein series,” in *Automorphic Forms and Related Topics*, Contemporary Mathematics vol. 732, 133–138 (AMS, 2019), eds. S. Anni, J. Jorgenson, L. Smajlovic, and L. Walling, preprint <https://arxiv.org/abs/1612.08434>
- “Modular forms constructed from moduli of elliptic curves, with applications to explicit models of modular curves” (expository), in *Automorphic Forms and Related Topics*, Contemporary Mathematics vol. 732, 139–154 (AMS, 2019), eds. S. Anni, J. Jorgenson, L. Smajlovic, and L. Walling, preprint <https://arxiv.org/abs/1612.08432>
- “On Jacobian group arithmetic for typical divisors on curves,” *Research in Number Theory* 4 (2018), no. 1, article 3, 29 pp., preprint <https://arxiv.org/abs/1310.6324>
- “Upper bounds for some Brill-Noether loci over a finite field,” *International Journal of Number Theory* 14 (2018), no. 3, 739–749, preprint <https://arxiv.org/abs/1609.03349>
- “Periods of modular forms and identities between Eisenstein series,” joint with W. Raji, *Mathematische Annalen* 367 (2017), no. 1, 165–183, preprint <https://arxiv.org/abs/1402.1854>
- “Moduli interpretation of Eisenstein series,” *International Journal of Number Theory* 8 (2012), no. 3, 715–748, preprint <https://arxiv.org/abs/0903.1439>
- “On the maps from $X(4p)$ to $X(4)$,” joint with S. Jaafar, *International Journal of Number Theory* 5 (2009), no. 5, 831–844, preprint <https://arxiv.org/abs/math.NT/0702545>
- “Generating functions for Hecke operators,” joint with H. Al Hajj Shehadeh and S. Jaafar, *International Journal of Number Theory* 5 (2009), no. 1, 125–140, preprint available from <https://arxiv.org/abs/math.NT/0610962>
- “On inverting the Koszul complex,” *Communications in Algebra* 36 (2008), 1830–1837, preprint <https://arxiv.org/abs/math.RT/0702876>
- “Fast Jacobian group operations for $C_{3,4}$ curves over a large finite field,” joint with F. Abu Salem, *LMS Journal of Computation and Mathematics* 10 (2007), 307–328, preprint available from <https://arxiv.org/abs/math.NT/0610121>
- “Asymptotically fast group operations on Jacobians of general curves,” *Mathematics of Computation* 76 (2007), 2213–2239, preprint <https://arxiv.org/abs/math.NT/0409209>
- “Linear algebra algorithms for divisors on an algebraic curve,” *Mathematics of Computation* 73 (2004), 333–357, preprint <https://arxiv.org/abs/math.NT/0105182>
- “An exact sequence in the representation theory of $SL(2)$,” *Communications in Algebra* 31 (2003), 4153–4160.
- “On the curves associated to certain rings of automorphic forms,” *Canadian Journal of Mathematics* 53 (2001), 98–121.

- “Representations of $SL(2) \times G$,” in *Automorphic Forms, Automorphic Representations, and Arithmetic*, Proceedings of Symposia in Pure Mathematics, vol. 66, no. 2, 251–276 (American Mathematical Society, 1999), eds. R. Doran, Z.-L. Dou, and G. Gilbert.
- “On the Iwahori-Hecke algebra of a p-adic group,” joint with N. Chriss, *International Mathematical Research Notices* (1998), no. 2, 85–100.
- “Relations between Fourier coefficients of nonholomorphic Hilbert modular forms of half-integral weight and special values of Dirichlet series,” Ph.D. thesis, Princeton University, 1993, revised version published as “On the Fourier coefficients of nonholomorphic Hilbert modular forms of half-integral weight,” *Duke Mathematical Journal* 84 (1996), 399–452.

3.3 Seminar talks since 1999

- Meromorphic functions and projective embeddings of abelian varieties (colloquium talk), University of Cyprus Mathematics Department colloquium, Nicosia, February 2024.
- Meromorphic functions and projective embeddings of abelian varieties (colloquium talk), Mathematics in Lebanon and Beyond, online seminar, January 2024.
- An analog of the Edwards model for Jacobians of genus 2 curves, Explicit methods in automorphic forms and arithmetic geometry, Hamilton Mathematics Institute, Trinity College Dublin, Ireland, June 2023.
- Edwards models for elliptic curves and abelian surfaces, 7th Mini-symposium of the Roman number theory association, Università Roma Tre, Rome, May 2023.
- An analog of the Edwards model for Jacobians of genus 2 curves, SAGA conference (Symposium on Arithmetic Geometry and its Applications), C.I.R.M., Luminy, February 2023.
- Meromorphic functions and projective embeddings of abelian varieties (survey talk), AUB Mathematics Department seminar, December 2022.
- Searching for “moduli-friendly” automorphic forms, Number Theory Lunch Seminar, Max Planck Institute for Mathematics, Bonn, September 2021 (online talk).
- Moduli of elliptic curves over \mathbf{C} , with application to obtaining equations for modular curves, mini-course (6 hours total) at the Harish-Chandra Research Institute Allahabad (HRI), January 2020.
- Jacobian group operations for typical divisors on curves, AMS-MAA Joint Mathematics Meetings, Baltimore, January 2019.
- Periods of modular forms and identities between Eisenstein series, Algebraic Geometry and Number Theory conference, Indian Statistical Institute Bangalore, December 2017.
- Jacobian group operations for typical divisors on curves, Workshop on Algorithms in Number Theory and Arithmetic Geometry, University of Leiden, August 2017.
- Bounding Brill-Noether loci over a finite field, LSMS Annual Conference (Lebanese Society for Mathematical Sciences), University of Balamand, April 2017.
- (i) Explicit equations for modular curves, two lectures given for a mini-course, and (ii) Periods of modular forms and identities between Eisenstein series, conference talk, at the Building Bridges 3 Summer School and Workshop on Automorphic Forms and Related Topics, Sarajevo, July 2016.
- Eisenstein series of weight 1, and Periods of modular forms and identities between Eisenstein series, two talks given at POSTECH, Pohang, South Korea, May 2016.
- The ring of modular forms on $\Gamma(N)$, Mathematics Department Seminar, Notre Dame University, Louaizé, Lebanon, April 2016.
- Algorithmic representation of a curve and its Jacobian, conference on Arithmetic Geometry: Explicit Methods and Applications conference, Moscow Center for Continuous Mathematical Education, December 2015.

- Bounding Brill-Noether loci over finite fields, with applications to Jacobian arithmetic, AGCT-15 Conference (Arithmetic, Geometry, Cryptography and Coding Theory), C.I.R.M., Luminy, May 2015.
- Typical divisors on curves and some applications to Jacobian arithmetic (primarily a survey talk), AUB Mathematics Department seminar, February 2015, repeated at Lebanese University Mathematics Department seminar, February 2015.
- Ideal generating sets and Las Vegas algorithms for colon ideals on curves, Number Theory in Kaiserslautern 20 conference, November 2014.
- On Jacobian group arithmetic for typical divisors on curves, Moduli interpretation of Eisenstein series, and Periods of modular forms and identities between Eisenstein series, three talks presented at Université Bordeaux, Mathematics department and INRIA, July 2014.
- Eisenstein series of weight 1, Boston College Number Theory and Algebraic Geometry Seminar, April 2014.
- Eisenstein series of weight 1, Princeton University/IAS Number Theory Seminar, March 2014.
- Eisenstein series of weight 1, Brown University Algebraic Geometry Seminar, March 2014.
- Periods of modular forms and identities between Eisenstein series, Boston University Number Theory Seminar, March 2014.
- Periods of modular forms and identities between Eisenstein series, MIT Number Theory Seminar, February 2014.
- Eisenstein series of weight 1, Harvard University Number Theory Seminar, February 2014.
- Eisenstein series of weight 1, Texas A&M University in Qatar, June 2013.
- On Jacobian group arithmetic for typical divisors on curves, Center for Advanced Mathematical Sciences (CAMS), American University of Beirut (AUB), November 2012.
- Some classical calculations with ${}_2F_1$ s (survey talk), School and Workshop on Computational Algebra and Number Theory, ICTP, Trieste, June 2012.
- Eisenstein series of weight 1, International Workshop in Mathematics, German University of Technology, Oman, February 2012.
- Using algebraic values of modular forms to obtain models of modular curves, Workshop on Explicit Methods in Number Theory, Mathematisches Forschungsinstitut Oberwolfach, Germany, July 2011.
- Using algebraic values of modular forms to obtain models of modular curves, part of workshop “Algorithms for Curves, Moduli, and Isogenies”, Laboratoire LIX, École Polytechnique, July 2011.
- Two talks: (i) Algorithmic representation of a curve and its Jacobian, and (ii) Using algebraic values of modular forms to obtain models of modular curves, ALGOL conference, University of Lyon, June 2011.
- Projective embeddings of algebraic curves, with applications to modular curves (survey talk), AUB Mathematics Department Colloquium, May 2011.
- Using algebraic values of modular forms to obtain models of modular curves, AGCT-13 Conference (Arithmetic, Geometry, Cryptography and Coding Theory), C.I.R.M., Luminy, March 2011.
- Using algebraic values of modular forms to obtain models of modular curves, Rational Points 3 workshop, University of Bayreuth, July 2010.
- Periods of modular forms and identities between Eisenstein series, University of Bristol seminar, May 2010.
- Equations for modular curves (survey talk), University of Cyprus Mathematics Department Colloquium, December 2009.

- Equations for modular curves (survey talk), Center for Advanced Mathematical Sciences (CAMS), American University of Beirut (AUB), November 2009.
- Fast arithmetic in Picard groups of general curves, MAGMA seminar, University of Sydney, September 2009.
- Moduli interpretation of Eisenstein series, Conference on modular forms and related topics, Center for Advanced Mathematical Sciences (CAMS), American University of Beirut (AUB), July 2009.
- Moduli interpretation and equations for modular curves, four-hour minicourse presented at the Centre de Recherches Mathématiques, Université de Montréal, as part of the CRM Summer School on Automorphic Forms and L-Functions: Computational Aspects, June–July 2009.
- Generating functions for Hecke operators, AUB Mathematics Department Colloquium, February 2009.
- Moduli interpretation and improved convergence for Eisenstein series, CAMS seminar, AUB, October 2008.
- Representing algebraic curves by interpolation, with applications to modular curves, seminar at Technische Universität Berlin, June 2008.
- Algorithmic representation of a curve and its Jacobian, CAMS seminar, AUB, October 2007.
- Fast Jacobian arithmetic on $C_{3,4}$ curves, Workshop on Rational Points on Curves and Higher-Dimensional Varieties: Theory and Explicit Methods, International University of Bremen, Germany, July 2007.
- Algorithmic representation of a curve and its Jacobian, Workshop on Explicit Methods in Number Theory, Mathematisches Forschungsinstitut Oberwolfach, Germany, July 2007.
- Algorithmic representation of a curve and its Jacobian, Université Grenoble Number Theory Seminar, June 2007.
- Fast group operations on Jacobians of $C_{3,4}$ curves, presentation at internal seminar of Ecole Polytechnique Algorithmic Number Theory and Cryptology Group, June 2007.
- Algorithmic representation of a curve and its Jacobian, Computer Algebra Conference in Kaiserslautern, May 2007.
- Algorithmic representation of a curve and its Jacobian, Universités Paris 6 & 7 Number Theory Seminar, May 2007.
- Algorithmic representation of a curve and its Jacobian, Université Rennes Cryptography Seminar, May 2007.
- Algorithmic representation of a curve and its Jacobian, Université Montpellier Number Theory Seminar, March 2007.
- Algorithmic representation of a curve and its Jacobian, Université Bordeaux Number Theory Seminar, March 2007.
- Fast algorithms for Picard groups of general curves, Magma 2006 conference, Technical University of Berlin, August 2006.
- Fast algorithms for Picard groups of general curves, University of Leipzig Mathematics Department, July 2006.
- On equations for modular curves, Fast group arithmetic on Jacobians I, and Fast group arithmetic on Jacobians II: three talks presented at the University of Duisburg-Essen, as part of a scientific visit to the Institute for Experimental Mathematics in Essen, Germany, August 2005.
- Implementing addition on $J(k)$, Workshop on Rational Points on Curves — Explicit Methods, International University of Bremen, Germany, July 2005.

- Applications of elliptic curves in cryptography and computational number theory (mini-course), 6 hours of lectures delivered as part of CIMPA-UNESCO-LEBANON Summer School, Beirut, July 2004. Lecture notes available from <https://sites.aub.edu.lb/kmakdisi/cv/makdisi-cimpa-lectures-2004/>
- Fourier Coefficients of Maass Forms (survey talk), AUB Mathematics Department Colloquium, April 2004.
- Asymptotically fast algorithms for Jacobians of general curves, Courant Institute of Mathematical Sciences Special Joint Math/Computer Science Seminar (NYU), September 2003.
- Asymptotically fast algorithms for Jacobians of general curves, presentation at internal seminar of École Polytechnique Algorithmic Number Theory and Cryptology Group, Paris, July 2003.
- Asymptotically fast algorithms for Jacobians of general curves, Journées Arithmétiques XXIII Conference, Graz, Austria, July 2003.
- Computations on modular curves (short presentation), SARIMA-Lebanon workshop on mathematical modelling and numerical computing, CAMS, May 2003.
- Asymptotically fast algorithms for Jacobians of general curves, American Mathematical Society (AMS) Central Sectional Meeting, Bloomington, Indiana, April 2003.
- Asymptotically fast algorithms for Jacobians of general curves, Ohio State University HAAR Seminar, April 2003.
- Linear algebra algorithms for divisors on an algebraic curve, AMS Northeastern Sectional Meeting, Montréal, May 2002.
- Nonnegativity of central values of automorphic L-functions on $PGL(2)$ (survey talk), AMS Northeastern Sectional Meeting, Montréal, May 2002.
- Linear algebra algorithms for divisors on an algebraic curve, McGill University Algebraic Geometry Seminar, May 2002.
- Introduction to elliptic curves (survey talk), American University of Beirut Mathematics Department, June 2001.
- Linear algebra algorithms for divisors on an algebraic curve, Università Roma II Number Theory Seminar, May 2001.
- Linear algebra algorithms for divisors on an algebraic curve, Five College Number Theory Seminar, Amherst College, Massachusetts, April 2001.
- Counting primes and lattice points in the plane (survey talk), Haverford College Mathematics Department, Pennsylvania, April 2001.
- On the curves associated to certain rings of automorphic forms, Université Paris XIII Mathematics Department, June 2000.
- Complex tori with quaternionic endomorphisms, First Beit Mery Workshop on Mathematical Sciences: Geometry and Physics (organized by CAMS, AUB), January 2000.
- Modular curves and L-functions (survey talk), CAMS, American University of Beirut, November 1999.

4 Teaching

4.1 Teaching Awards — Nominations and Awards Received

- 2005, 2007, 2008, 2009, 2013, 2016, 2020, and 2024: Nominated eight times for AUB Award for Excellence in Teaching, American University of Beirut.

- 1998: Received Phi Beta Kappa award for excellence in teaching, Harvard University. The award is given yearly at Harvard by the Phi Beta Kappa honor society for scholars. I was one of four winners at Harvard in 1998.
- 1996: Received Levenson award for excellence in undergraduate teaching, Harvard University. I was the winner in the junior faculty category that year. The award is given out by the Undergraduate Council at Harvard University, on the basis of student nominations. I have been told that I received a nomination from every single student in my Math 25b class that spring semester.

4.2 Courses Taught

- Spring 2025, American University of Beirut:
 1. Math 211, Discrete Structures (35 students)
 2. Math 242, Topics in Algebra II (advanced undergraduate course on factorization, field extensions, and Galois theory, 11 students)
- Fall 2024, American University of Beirut:
 1. Math 219, Linear Algebra I (14 students)
 2. Math 341, Modules and Rings (graduate abstract algebra, 8 students)
- Spring 2024, American University of Beirut:
 1. Math 220, Linear Algebra II (5 students)
- Fall 2023, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 130 students)
 2. Math 261, Number Theory (10 students)
- Spring 2023, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 97 students)
 2. Math 242, Topics in Algebra II (advanced undergraduate class, 11 students)
- Fall 2022, American University of Beirut:
 1. Math 261, Number Theory (16 students)
 2. Math 341, Modules and Rings (graduate abstract algebra, 6 students)
- Fall 2020, American University of Beirut — completely taught online:
 1. Math 219, Linear Algebra I (12 students)
 2. Math 341, Modules and Rings (graduate abstract algebra, 10 students)
- Spring 2020, American University of Beirut — partially taught online:
 1. Math 202, Differential Equations (large lecture, 109 students)
- Fall 2019, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 82 students)
 2. Math 241, Introduction to Abstract Algebra (27 students)
- Spring 2019, American University of Beirut:
 1. Math 223, Advanced Calculus (advanced undergraduate class, 33 students)
 2. Math 242, Topics in Algebra II (advanced undergraduate class, 5 students)
- Fall 2018, American University of Beirut:
 1. Math 219, Linear Algebra I (24 students)

- 2. Math 341, Modules and Rings (graduate abstract algebra, 7 students)
- Spring 2018, American University of Beirut:
 1. Math 219, Linear Algebra I (17 students)
 2. Math 242, Topics in Algebra II (6 students)
- Fall 2017, American University of Beirut:
 1. Math 219, Linear Algebra I (27 students)
 2. Math 341, Modules and Rings (graduate abstract algebra, 9 students)
- Spring 2017, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 91 students)
 2. Math 242, Topics in Algebra II (10 students)
- Fall 2016, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 89 students)
 2. Math 341, Modules and Rings (graduate abstract algebra, 6 students)
- Spring 2016, American University of Beirut:
 1. Math 219, Linear Algebra I (7 students)
 2. Math 220, Linear Algebra II (6 students)
 3. Math 242, Topics in Algebra II (7 students)
- Fall 2015, American University of Beirut:
 1. Math 219, Linear Algebra I (15 students)
 2. Math 261, Number Theory (17 students)
 3. Math 301, Graduate Tutorial Course (introduction to commutative algebra and algebraic geometry, 1 student)
- Spring 2015, American University of Beirut:
 1. Math 219, Linear Algebra I (17 students)
 2. Math 220, Linear Algebra II (9 students)
 3. Math 242, Topics in Algebra II (7 students)
- Fall 2014, American University of Beirut:
 1. Math 219, Linear Algebra I (22 students)
 2. Math 261, Number Theory (11 students)
- Fall 2013, American University of Beirut:
 1. Math 211, Discrete Structures (large lecture, 86 students)
 2. Math 261, Number Theory (15 students)
- Spring 2013, American University of Beirut:
 1. Math 344, Commutative Algebra (3 students). The course covered the contents of the textbook by Atiyah-Macdonald, with additional material on affine algebras, the Noether normalization lemma, the Hilbert Nullstellensatz, and Krull's original proof of the principal ideal theorem.
- Fall 2012, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 98 students, and one of four recitation sections, 26 students)

- 2. Math 341, Modules and Rings (graduate abstract algebra, 7 students)
- Spring 2012, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 59 students, and one of four recitation sections, 20 students)
 2. Math 242, Topics in Algebra II (8 students), mainly field extensions and Galois theory
- Fall 2011, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 98 students)
 2. Math 241, Introduction to Abstract Algebra (13 students)
- Spring 2011, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 57 students, and one of four recitation sections, 30 students)
 2. Math 223, Advanced Calculus (advanced undergraduate class, 14 students)
- Fall 2010, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 62 students)
 2. Math 210, Introduction to Analysis (26 students)
- Fall 2009, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 53 students)
 2. Math 261, Number Theory (12 students)
 3. Math/Computer Science 358, Introduction to Symbolic Computing (graduate tutorial course, 1 student)
- Spring 2009, American University of Beirut:
 1. Math 211, Discrete Structures (large lecture, 60 students, and one of four recitation sections, 16 students)
 2. Math 345, Topics in Algebra (graduate-level course on algebraic number theory, 5 students)
- Fall 2008, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 71 students, and one of three recitation sections, 22 students)
 2. Math 224, Fourier Series and Applications (advanced undergraduate class, 5 students)
- Spring 2008, American University of Beirut:
 1. Math 202, Differential Equations (lecture, 41 students, and one of four recitation sections, 16 students)
 2. Math/Computer Science 358, Introduction to Symbolic Computing (graduate course, 5 students)
- Fall 2007, American University of Beirut:
 1. Math 211, Discrete Structures (large lecture, 91 students, and one of four recitation sections, 25 students)
 2. Math 261, Number Theory (9 students)
- Fall 2006, American University of Beirut:
 1. Math 211, Discrete Structures (large lecture, 110 students, and one of four recitation sections, 27 students)
 2. Math 219, Linear Algebra I (20 students)

- Spring 2006, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 78 students, and two of four recitation sections, 38 students total)
 2. Math 301, Graduate Tutorial Course (representations of finite groups, 1 student)
 3. Math 345, Topics in Algebra (graduate-level course on algebraic number theory, 3 students)
- Fall 2005, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 103 students, and one of four recitation sections, 23 students)
 2. Math 341, Modules and Rings (graduate abstract algebra, 6 students)
- Spring 2005, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 94 students)
 2. Math 242, Topics in Algebra II (9 students), similar to Spring 2003
- Fall 2004, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (large lecture, 119 students, and one of four recitation sections, 31 students)
 2. Math 219, Linear Algebra I (16 students)
 3. Math 301, Graduate Tutorial Course (algorithmic number theory, 1 student)
- Spring 2004, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 108 students, and two of four recitation sections, 54 students total).
 2. Math 344, Commutative Algebra (5 students). Topics covered: Prime ideals and localization, Noetherian rings and modules, primary decomposition, integral dependence, affine algebras and affine varieties including their dimension, Noether normalization, and Hilbert Nullstellensatz, discrete valuation rings and Dedekind domains.
- Fall 2003, American University of Beirut:
 1. Math 201, Calculus and Analytic Geometry III (two large lectures, 189 students total, and one of eight recitation sections, 26 students)
- Spring 2003, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 66 students, and one of five recitation sections, 29 students)
 2. Math 242, Topics in Algebra II (7 students). Covered unique factorization, polynomial rings, field extensions, and Galois theory at an advanced undergraduate level.
- Spring 2002, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 119 students, and one of five recitation sections, 27 students)
 2. Math 210, Introduction to Analysis (23 students)
- Fall 2001, American University of Beirut:
 1. Math 219, Linear Algebra I (43 students)
 2. Math 261, Number Theory (7 students)
 3. Math 345, Topics in Algebra (graduate-level course on algorithmic number theory, 3 students)
- Spring 2001, American University of Beirut:
 1. Math 210, Introduction to Analysis (13 students)

- Fall 2000, American University of Beirut:
 1. Math 219, Linear Algebra I (two sections, $20 + 28 = 48$ students total)
- Spring 2000, American University of Beirut:
 1. Math 202, Differential Equations (large lecture, 188 students, and one of six recitation sections, 31 students)
- Fall 1999, American University of Beirut:
 1. Math 202, Differential Equations (30 students)
 2. Math 261, Number Theory (11 students)
 3. Math 301, Graduate Tutorial Course (algebraic number theory, 1 student)
- Fall 1998, McGill University:
 1. Math 189–261A, Differential Equations for Engineers (large lecture, 105 students)
- Spring 1998, Harvard University:
 1. Math 1b, Calculus, Series, and Differential Equations (second semester single-variable calculus and some differential equations, 22 students)
 2. Math 250b, Higher Algebra (II) (graduate abstract algebra, 11 students)
- Fall 1997, Harvard University:
 1. Math 250a, Higher Algebra (I) (graduate abstract algebra, 13 students)
- Spring 1997, Harvard University:
 1. Math 25b, Honors Multivariable Calculus and Linear Algebra (II) (51 students)
 2. Math 154, A Second Course in Real Analysis (advanced undergraduate Fourier series and Partial Differential Equations with distributions, 9 students)
- Fall 1996, Harvard University:
 1. Math 25a, Honors Multivariable Calculus and Linear Algebra (I) (58 students)
- Spring 1996, Harvard University:
 1. Math 25b, Honors Multivariable Calculus and Linear Algebra (II) (42 students)
- Fall 1995, Harvard University:
 1. Math 25a, Honors Multivariable Calculus and Linear Algebra (I) (48 students)
 2. Math 254a, Analytic Theory of Modular Forms (advanced graduate course, 8 students and several auditors)
- Spring 1994, Harvard University:
 1. Math 250b, Higher Algebra (II) (graduate abstract algebra, 8 students)
- Fall 1993, Harvard University:
 1. Math 21a, Multivariable Calculus (30 students)
 2. Math 250a, Higher Algebra (I) (graduate abstract algebra, 9 students)

4.3 Theses Supervised

- 2023–2024: Supervised an M.S. thesis in the mathematics department at AUB, on A proof of the class number formula. The student subsequently applied to medical school.
- 2020: Supervised an M.S. thesis (“Mémoire de M2”) in the mathematics department at the Lebanese University on the proof of the Prime Number Theorem, following the treatment in the book “Multiplicative Number Theory” by H. Davenport.
- 2019–2020: Supervised an M.S. thesis in the mathematics department at AUB, on Theta series and its application to the sum of squares. The student was subsequently admitted to the second year of M.S. programs (M2) in Paris and Rennes.
- 2018–2019: Supervised an M.S. thesis in the mathematics department at AUB, on Admissible representations of $GL(2, \mathbf{Q}_p)$, the Kirillov model, and application to local new vectors. The student was subsequently admitted into the graduate program at the University of Toronto.
- 2012–2013: Supervised two M.S. theses in the mathematics department at AUB. Thesis topics: (i) Some discrete series representations for noncompact unitary groups (the student subsequently received a Ph.D. in number theory from the University of Washington), (ii) Some classical and p-adic L-functions for number fields (the student was subsequently accepted into Part III of the Mathematical Tripos at the University of Cambridge and then to the graduate program at Purdue University).
- 2010–2012: Supervised two M.S. theses in the mathematics department at AUB. Thesis topics: (i) Reduction theory for $GL(n)$ and $O(p, q)$, (ii) Iwasawa, Cartan, and Bruhat decompositions for $GL(n)$ and $O(p, q)$.
- 2010–2011: Supervised an M.S. thesis in the mathematics department at AUB, on Arithmetic of quaternion algebras. The thesis included a proof of the structure theory of quaternion algebras over a number field (using Fourier analysis on the adelic quaternion algebra), as well as the theorem on strong approximation and its application to finiteness of the class number and to arithmetic groups. The student subsequently received a Ph.D. in geometric measure theory from the University of Washington.
- 2008–2009: Supervised two M.S. theses in the mathematics department at AUB. Titles: (i) Theta functions on g -dimensional complex tori, (ii) Siegel modular forms and theta functions. The first student gave a presentation of the spaces of theta functions for a polarization on a fixed lattice in \mathbf{C}^g , and the polynomial equations between such theta functions; the second student allowed the lattice to vary, and gave a presentation of Siegel modular forms with special attention to transformation laws and convergence properties of theta functions and Eisenstein series in arbitrary degree g .
- 2006–2007: Supervised an M.S. thesis in the mathematics department at AUB, on Descent on elliptic curves and the Mordell-Weil theorem. The thesis included a complete proof of the Mordell-Weil theorem for elliptic curves over an arbitrary number field, and gave examples of explicit descent computations on curves of the form $Y^2 = X(X^2 + p)$, with the goal of redoing some of the computations in an article by Bremner and Cassels (Mathematics of Computation 1984) from a different perspective. The student subsequently received a Ph.D. in number theory from the University of British Columbia.
- 2005–2007: Supervised an M.S. thesis in the mathematics department at AUB, on Quadratic forms over \mathbf{Q} and \mathbf{Z} . The student studied rational and integral quadratic forms, and the thesis contained an exposition of the proof of the Hasse-Minkowski theorem and of the finiteness of the number of classes in a genus of quadratic forms. The student subsequently received a Ph.D. in mathematics education from Texas A&M University.
- 2002–2003: Supervised an M.S. thesis in the mathematics department at AUB, on Elliptic curves and applications to cryptography. The student learnt enough about the theory of elliptic curves to have implemented (and understood) Schoof’s algorithm for counting points on an elliptic curve over a finite field. The student subsequently worked with me as a research assistant, and two preprints have been written up based on our results. The student subsequently received a second M.S. in mathematics from Rutgers University.

- 2000–2001: Supervised an M.S. thesis in the mathematics department at AUB, on Integer factorization and the quadratic sieve. For the thesis, the student implemented the quadratic sieve algorithm for factoring large integers and gave a heuristic analysis of its running time. The student subsequently obtained a Ph.D. from the Oxford University Computing Laboratory and has come back to AUB as a faculty member in computer science.
- 1997–1998: Supervised a B.S. thesis in the mathematics department at Harvard, on Artin L-functions.

4.4 Other Teaching Activities — see also Committee Work in the section on Service below

- Service on thesis defense committees where I was not the advisor: external reviewer for three Ph.D. theses at Bordeaux (summer 2021 and summer 2014 (2)), a Ph.D. thesis at Marseille (fall 2012), a Ph.D. thesis at the Lebanese University (fall 2011), a Ph.D. thesis at Nancy (fall 2011), a Ph.D. thesis at Leiden (spring–summer 2010), a Ph.D. thesis defense at Princeton University (summer 2003), several M.S. thesis defenses at AUB (spring 2022, spring 2021 (2), spring 2020, spring 2019, spring 2013 (2), spring 2012, spring 2011, spring 2010, spring 2009 (2), fall 2008 (2), spring 2008, fall 2004, and summer 2000).
- Mathematical outreach to high-school students in Lebanon: (i) 2013–2019: Helped put together a trainer and a team of Lebanese high school students who participated in the Mediterranean Youth Mathematical Championship (MYMC) in Italy during July 2013, 2015, 2016, 2017, 2018, and 2019. (ii) 2010–2013: Consulting researcher, mathematics clubs and other mathematics activities for middle and secondary school students, Lycée Franco-Libanais and other Lycée schools, Lebanon. (iii) 2001: gave survey talks on probability and error-correcting codes at two schools, Eastwood College and International College.
- Member, qualifying exams committee, Harvard University, 1995–1997. Wrote, evaluated for suitability, and graded questions for first and second-year graduate students’ qualifying exams.

4.5 Undergraduate Advising at AUB

- 2005–2012: Advising of mathematics majors of the Classes of 2008 and 2011 (between 10–20 advisees at any given moment, as students joined or left the major).
- 2001–2005: Advising of several junior and senior computer science majors (around 40 students at first, decreasing after two years to around 10 students).
- 2000–2001: Advising of sophomore mathematics majors and some computer science majors (around 15 students).

5 Service

5.1 Conference organization

- Scientific Committee, CIMPA summer school on L-functions and modular forms in number theory, CAMS, AUB, Beirut, Lebanon, originally scheduled for June 2024, now planned for June 2025.
- Co-organizer, Explicit methods in automorphic forms and arithmetic geometry, Hamilton Mathematics Institute, Trinity College Dublin, Ireland, June 2023.
- Co-organizer, Workshop on Number Theory, CAMS, AUB, Beirut, Lebanon, May 2018.
- Program Committee Member, Algorithmic Number Theory Symposium ANTS-XII, University of Kaiserslautern, Germany, August 2016.
- Scientific Committee, Fourth annual meeting of the Lebanese Society for Mathematical Sciences (LSMS), Université Saint Joseph, Lebanon, May 2013.
- Co-organizer, Workshop on Number Theory, CAMS, AUB, Beirut, Lebanon, April 2013.

- Scientific Committee, Third annual meeting of the Lebanese Society for Mathematical Sciences (LSMS), American University of Beirut, Lebanon, April 2012.
- Co-organizer, Workshop on Modular forms and Related Topics, CAMS, AUB, Beirut, Lebanon, February 2012.
- Scientific Committee Member, Second annual meeting of the Lebanese Society for the Mathematical Sciences (LSMS), Lebanese American University, Beirut, Lebanon, April 2011.
- Program Committee Member, Algorithmic Number Theory Symposium ANTS-IX, LORIA, Nancy, France, July 2010. Refereed four articles proposed for the conference, and arranged for external referees' comments on the same articles. Discussed acceptances of these and other articles for the conference proceedings.
- Scientific Committee Member, First annual meeting of the Lebanese Society for the Mathematical Sciences (LSMS), Lebanese University, Fanar, Lebanon, January 2010.
- Organizing Committee Member, Conference on Modular Forms and Related Topics, CAMS, AUB, Beirut, Lebanon, July 2009.
- Scientific Committee Member, CIMPA-UNESCO-LEBANON summer school on algebraic geometry and arithmetic of curves, CAMS, AUB, Beirut, Lebanon, July 2004. The summer school was sponsored by CIMPA (Centre International de Mathématiques Pures et Appliquées, Nice, France). Lecturer for one of the courses of the summer school. Also involved in significant organizational work for the school.
- Organizing Committee Member, Second International Conference on Trends in Mathematics Education (ICTME-2) at the Lebanese American University, June 2003. As secretary of organizing committee, handled registration information, paper submission and refereeing, and other correspondence (such as enquiries) for 80 participants.
- Organizing Committee Member, First Beit Mery Workshop on Mathematical Sciences: Geometry and Physics, organized by CAMS, January 2000.

5.2 Committee work

- Service on post-tenure review (PTR) committees at AUB, 2024–25, for a total of five faculty members.
- AUB Faculty of Arts and Sciences (FAS) Advisory Committee, 2023–25. The committee reviews and advises the Dean of FAS on all hiring, promotion, renewal, and leave cases for faculty in FAS, as well as policy proposals and other issues related to faculty.
- AUB Mathematics Department hiring committee, 2023–25.
- AUB Mathematics Department internal curriculum committee, 2022–25.
- Served on eight peer review committees for tenure/promotion cases at AUB, chairing four of them, 2018–25.
- AUB Faculty of Arts and Sciences (FAS) Advisory Committee, 2017–19.
- Hiring committee chair, AUB economics department, 2017–18. Managed the search for a full professor who would join as chair of the economics department.
- AUB Self-Study Steering Committee, and co-chair of Working Group I on Mission and Goals, 2017–19. Member of self-study team for reaccreditation of AUB; the team carried out a long and thorough process to produce the required self-study document, and had several meetings with the external evaluation team both during the preparation of the document and during their site visit for reaccreditation.

- AUB University Senate Board of Graduate Studies, 2016–19. The committee reviews all proposals for new graduate-level programs at AUB from all academic faculties at AUB. The Board of Graduate Studies also reviews university-wide curriculum and policy changes in its graduate programs. As member of this committee, I was also *ex officio* a member of the FAS Graduate Council, which reviews all graduate applications to the Faculty of Arts and Sciences (FAS) after departments have made their recommendations for admission. The FAS Graduate Council also decides on all student petitions and leave requests, as well as curriculum changes in graduate programs at FAS.
- AUB Mathematics Department internal committee on criteria for promotion and tenure, Spring 2017.
- AUB Faculty of Engineering and Architecture (FEA) Advisory Committee external member, Spring 2017. The committee reviewed, discussed, and voted on 13 FEA promotion cases that had been forwarded after departmental review to the FEA Dean's Office.
- Participant, University-wide Strategic Planning, 2016–17.
- Chair, Hiring Committee, AUB Mathematics Department, 2013–17 (prior to that, member of the hiring committee for some years). As committee chair, managed getting the advertisement approved and posted early, transitioning to using mathjobs.org for our hiring process, evaluating approximately 120 applications each year (compared to 40 before I became committee chair), organizing all phone/Skype interviews and on-campus visits of candidates, interviewing some candidates at the AMS-MAA Joint Meetings, discussing in committee and with the department about hiring strategies and shortlists, voting in the department on which offers the department will recommend, and coordinating with the department chair, the Faculty of Arts and Sciences Dean, and the university Provost. Over the four years while I was chair, offers went out to 12 candidates, of whom 9 accepted AUB's offer. Taking into account departures and retirements, the number of professors in the department went from 14 to 18 during these four years.
- Served on a total of four promotion committees at AUB, 2012–14, chairing two of them.
- AUB Mathematics Department comprehensive exams for M.S. students: wrote and graded analysis exam in spring 2012 and algebra in spring 2007, spring 2013, and spring 2015.
- AUB Mathematics Department internal committee on faculty lines and teaching resources, Spring 2011 and Spring–Summer 2012. Analyzed enrollment in mathematics department courses and predicted optimal levels of faculty staffing under different scenarios.
- Administrative Committee, Lebanese Society for Mathematical Sciences (LSMS), 2009–16.
- Chair, Diversity and Technology Team, Faculty of Arts and Sciences (FAS) strategic plan committee, 2008–09. The FAS strategic plan for the coming 5–10 years identified several priority areas for enhancement. Our team assessed those priorities related to students' use of technology and the university preparation program (UPP), and proposed strategies and budgets to the FAS Dean's Office to implement these aspects of the plan.
- Computational Sciences Committee, FAS, AUB, 2004–10. The committee made a successful proposal to introduce a new M.S. degree program at AUB in Computational Sciences, to complement a previously existing undergraduate minor. The first students in the M.S. program joined AUB in September 2007. The committee was involved in administering and in further developing the graduate program as well as the minor.
- AUB Web Oversight Committee, 2003–11. Served as a representative of the AUB Faculty of Arts and Sciences. The committee is involved in discussions on reorganizing policies, content, and information structure for the entire AUB website.
- AUB mathematics *ad hoc* committee on teaching and learning objectives for the department's programs, Spring 2008. The purpose of this committee was to write overall objectives for the degree programs in the mathematics department, as part of ongoing self-assessment required by AUB's accreditation.

- AUB mathematics department committee on mathematics courses for engineering students, 2005–06. The committee adjusted the curriculum for a number of courses in the mathematics department that would replace courses previously taught in the Faculty of Engineering and Architecture for their students. The committee also assessed the implication on staffing and course administration needs that this would imply for the mathematics department.
- Participated in discussions with faculty members at other universities in Lebanon about the challenges faced in the teaching of science at the university level in the region, Fall 2003. Worked on selecting themes for a conference on the teaching of science at universities, October, 2004, Beirut, Lebanon. Discussions held under the auspices of the Lebanese National Commission for UNESCO, the sponsors for the conference.
- AUB mathematics department *ad hoc* committee on curriculum revision, Fall 2000. Tightened up and streamlined the curriculum and requirements for majoring in mathematics. Also took into account the different requirements that other departments have from mathematics courses, and looked for ways to encourage students from all departments to take more advanced mathematics courses, as electives or towards a minor in mathematics.

5.3 Other Service

- 2004–present: Refereeing internal AUB proposals for research grants by the University Research Board (URB), as well as external proposals for Natural Sciences and Engineering Research Council of Canada (NSERC) and the Lebanese National Council for Scientific Research (LNCSR).
- 1995–present: Refereeing articles for Glasgow Mathematical Journal, AAECC (Applicable Algebra in Engineering, Communication and Computing), Algorithmic Number Theory Symposium (ANTS), Annales Mathématiques Blaise Pascal, Journal de Théorie des Nombres de Bordeaux, IET Information Security, Designs, Codes and Cryptography, Springer Proceedings in Mathematics and Statistics, Research in Number Theory, Foundations of Computational Mathematics, CRM Monograph Series (Montréal), Journal of Pure and Applied Algebra, LMS Journal of Computation and Mathematics, Annales Mathématiques du Québec, International Journal of Number Theory, Journal of Number Theory, Journal of Algebra and its Applications, Journal of Symbolic Computation, Mathematische Zeitschrift, Information Processing Letters, Journal of the London Mathematical Society, Mathematics of Computation, Canadian Journal of Mathematics, Proceedings of the American Mathematical Society, and Duke Mathematical Journal.
- Hosting visitors in number theory and algebraic geometry, sometimes with funding from CAMS and AUB:
 1. A. Yassine, U. of California, Riverside, August 2019.
 2. P. R. Kotiuga, Boston U., May 2019.
 3. W. Kohlen, Heidelberg U., April 2019.
 4. A. D. Nimer, U. of Chicago, December 2018.
 5. M. Bright, Leiden U., November 2018.
 6. F. Balestrieri, MPI Bonn, September 2018.
 7. F. Brunault, ENS Lyon, May 2018.
 8. H. Sati, NYU Abu Dhabi, facilitated visit/seminar, May 2018
 9. S. Kondo, National Research University – Higher School of Economics, Moscow, November 2017.
 10. A. Bassa, Boğaziçi University, September 2017.
 11. K. I. Ikeda, Yeditepe University, April 2017.
 12. R. Sreekantan, ISI Bangalore, March 2017.
 13. N. Mascot, University of Warwick, October 2016.
 14. N. Mascot and A. Page, University of Warwick, April 2016.
 15. C. Diem and S. Kochinke, University of Leipzig, March 2016.

16. A. Le Meur, University of Rennes, May 2015.
 17. G. Hiary, University of Bristol, April 2013.
 18. G. Frey, Universität Duisburg-Essen, January 2010.
 19. R. Ramakrishna, Cornell University, April 2009.
 20. C. Diem, Universität Leipzig, February 2008.
 21. G. Shimura, Princeton University, May 2004.
 22. F. Pappalardi, Università Roma III, March 2002.
 23. A. F. Mokrane, Université Paris XIII, September 2001.
 24. J. Achter, Columbia University, June 2001.
 25. R. Vakil, Massachusetts Institute of Technology, May 2000.
 26. G. Shimura, Princeton University, May 2000.
 27. J. Tilouine, Université Paris XIII, November 1999.
- One of seven co-authors of a memorial article in honor of Goro Shimura, published as “Memories of Goro Shimura,” in *Notices of the American Mathematical Society* 67 (2020), no. 5, 677–689. Article available from <https://doi.org/10.1090/noti2076>
 - Significant participation in the editing and production of several documents at CAMS, such as its informational brochure and various funding proposals. In particular, coordinated writing and design of CAMS’ brochure during 2001–2002, in collaboration with the assistant to the director of CAMS and the university publications office.

6 Honors and Awards

- 2022: Member, Institute for Advanced Study, Princeton, February 2022–July 2022.
- 2021: Visiting scientist (12 months), Max-Planck Institute for Mathematics, Bonn, February 2021–January 2022.
- 2020: Scientific visitor (two weeks) at the Harish-Chandra Research Institute, Allahabad, India, January 2020.
- 2017: Scientific visitor (two months) at Institut des Hautes Etudes Scientifiques (IHES), Bures-sur-Yvette, France, June–August 2017.
- 2016: Visitor (one week), POSTECH, Pohang, South Korea, May 2016.
- 2015: Visitor (one and a half weeks), ICERM, Brown University, during special semester on computational aspects of the Langlands program, September 2015.
- 2015: Visiting scientist (one month), Max-Planck Institute for Mathematics, Bonn, June 2015.
- 2014: Visitor (one and a half weeks), Institut de Mathématiques de Bordeaux and INRIA, July 2014.
- 2014: Visiting scholar, Harvard University, spring semester 2014.
- 2011: Visiting scholar (two weeks), Ecole Polytechnique, Paris, July 2011.
- 2010: Visitor, Centre de Recherches Mathématiques, Université de Montréal (one month), March–April 2010.
- 2009: Visiting scholar, University of Sydney Computational Algebra Group (one month), August–September 2009.
- 2008: Faculty development grant, University Research Board, AUB. Partial funding to attend a workshop on rational points at the University of Warwick and for a scientific visit to Technische Universität Berlin.

- 2007: Visiting Professor, University of Paris (Paris 7 and 8, for one month each).
- 2007: Visiting Professor, University of Bordeaux (one month).
- 2003–2005: Awarded grant from University Research Board, AUB for research project in algorithmic number theory “Equations for Modular and Shimura Curves.” The funding was used to hire research assistants.
- 2003–2004: Awarded grant from Lebanese National Council for Scientific Research for research project “Equations for Modular and Shimura Curves.” The funding was used to purchase software and to hire a research assistant.
- 2003: Clay Mathematics Institute Prize Fellow, August 1–September 15, 2003. Visited Princeton University and attended “Unity of Mathematics” conference at Harvard University.
- 2003: TEMPUS Individual Mobility Grant from the European Training Foundation, for the month of July. Visited the mathematics department at Université Paris 13, made scientific contact with other mathematicians in Paris, and participated at the Journées Arithmétiques XXIII conference in Graz, Austria (July 7–July 12).
- 2003: Short-term faculty development grant, University Research Board, AUB. Spent late March–mid April at the Ohio State University, Columbus (attended conference on automorphic forms in honor of Steve Rallis), and attended AMS Spring Central Sectional Meeting in Bloomington, Indiana.
- 2002: Hewlett Junior Faculty Research grant, for a semester of research leave in the fall of 2002. This is a competitive grant awarded by AUB to a few junior faculty members each year, with funding from the William and Flora Hewlett Foundation.
- 2002: Long-term faculty development grant, University Research Board, AUB. Spent July at the Park City Mathematics Workshop on Automorphic Forms in Park City, Utah.
- 2000: Clay Mathematics Scholar for the summer of 2000. Visited Centre Emile Borel in Paris and Harvard University in Cambridge, Massachusetts. Attended conferences on automorphic forms and geometry in Paris and a workshop on algorithmic number theory at MSRI, Berkeley, California.
- 1998: Phi Beta Kappa award for excellence in teaching, Harvard University (see full description under Teaching Awards above).
- 1996: Levenson award for excellence in undergraduate teaching, Harvard University. (see full description under Teaching Awards above).
- 1989–1993: Supported by a National Science Foundation Graduate Fellowship and a grant from the U.S. Department of Education.
- 1988: DeForest prize for proficiency in pure and applied mathematics, Yale University.
- 1988: Edward O. Lanphier memorial award in electrical engineering, Yale University.
- 1986–1987: Honorable Mention, 47th and 48th annual Putnam mathematics competition (ranked in the top 30).
- 1987: Anthony D. Stanley prize for excellence in mathematics, Yale University.
- 1986: Elected to Phi Beta Kappa (national arts and sciences honor society) and to Tau Beta Pi (national engineering honor society) during junior year of college.
- 1986: Benjamin F. Barge prize for solution of mathematical problems, Yale University.
- 1983: Highest scorer, Lebanese Baccalaureate examinations, first part (Scientific).

7 Previous academic work in electrical engineering and computer science

- Basic coursework in electronic circuit analysis and design, control theory, data structures, systems programming, digital electronics, computer architecture, and VLSI design.
- Graduate courses in theoretical computer science (mainly complexity theory) and in algorithms for computer-aided design of integrated circuits (including a project that involved implementing a new algorithm for the placement problem).