Curriculum Vitae, Jan. 27, 2022

1. Name and position

Govind Menon,
Professor,
Division of Applied Mathematics, Brown University.

2. Home address

54 Holly St, Providence, RI 02906.

3. Education

B.Tech (Hons) **1994**, IIT, Kharagpur, India, (Mechanical Engineering).

M.S. **1996** , Cornell University, (Theoretical and Applied Mechanics).

Ph.D. **2001**, Brown University, (Applied Mathematics).

Ph.D Dissertation: Geometric methods for the Maxwell-Bloch equations and the kinetics of martensitic phase transitions. *Advisor:* G. Haller.

4. Professional appointments

Guest Scientist, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany. Oct. 2000 – Aug. 2001.

Van Vleck Assistant Professor, Dept. of Mathematics, University of Wisconsin, Madison, WI, Aug. 2001 – May 2004.

Assistant Professor, Division of Applied Mathematics, Brown University, July 2004 – June 2008.

Associate Professor, Division of Applied Mathematics, Brown University, July 2008 – June 2013.

Professor, Division of Applied Mathematics, Brown University, July 2013 – present.

Significant short term appointments
Institute for Applied Mathematics, University of Bonn, July 2001, 2002, 2003, 2005.

Institute of Applied and Computational Mathematics, University of Crete, June 2003.

Institute for Mathematics and its Applications, University of Minnesota, Sept. 2005–Nov. 2005.

Department of Mathematics, University of Auckland, July–Dec. 2011.

Adjunct Professor, Center for Applicable Mathematics, Tata Institute of Fundamental Research, Bangalore, May 2007–May 2010.

Associate Director, ICERM, Brown University, Oct. 2011 – Dec. 2014.

Member, School of Mathematics, Institute for Advanced Study, Princeton, Sept. 2018– June 2019.

5 a. Books and Monographs
1. *Mathematics and Materials.* M. J. Bowick, D. Kinderlehrer, G. Menon and C. Radin (editors). Vol 23 of IAS/PCMI Mathematics Series, American Mathematical Society.

5 c. Refereed journal articles
1. G. Menon, Gevrey class regularity for the attractor of the laser equations. *Nonlinearity, 12*, **1999**, 1505–1510.

2. G. Haller, G. Menon and V. Rothos, Silnikov manifolds in coupled nonlinear Schrödinger equation. *Phys. Lett. A, 263*, **1999**, 175–185.

3. G. Menon, G.H. Paulino and S. Mukherjee, Analysis of hypersingular residual error estimates in boundary element methods for potential problems. *Comput. Methods. Appl. Mech. Engrg., 173*, **1999**, 449–473.

4. G. Menon and G. Haller, Infinite-dimensional geometric singular perturbation theory for the Maxwell-Bloch equations, *SIAM J. Math. Anal., 33*, **2001**, 315–346.

5. G.H. Paulino, G. Menon and S. Mukherjee, Error estimation using hypersingular integrals in boundary element methods for linear elasticity. *Engineering Analysis with Boundary Elements, 25*, **2001**, pp.523-534.

6. G. Menon, Gradient systems with wiggly energies and related averaging problems. *Arch. Rational. Mech. Anal., 162*, **2002**, 193–246.

7. G. Menon and R.L.Pego, Approach to self-similarity in Smoluchowski's coagulation equations. *Comm. Pure. Appl. Math*, *57*, **2004**, 1197-1232 .

8. G. Menon and F. Otto, Dynamic scaling in miscible viscous fingering, *Comm. Math. Phys*, *257*, **2005**, 303-317.

9. G. Menon and R.L. Pego, Dynamic scaling in Smoluchowski's coagulation equation: uniform convergence. *SIAM J. Math. Anal.*, *36*, **2005**, 1629-1651.

10. G. Menon and F. Otto, Diffusive slowdown in miscible viscous fingering, *Comm. Math. Sci*, *4*, **2006**, 257-273.

11. G. Menon and R.L. Pego, Dynamic scaling in Smoluchowski's coagulation equation: uniform convergence. *SIAM Review*, *48*, **2006**, 748–768.

12. G. Menon and R.L.Pego, Universality classes in Burgers turbulence. *Comm. Math. Phys.*, *273*, **2007**, 177–202.

13. G. Menon, Mathematical approaches to dynamic scaling. *J. Non-Newtonian Fluid Mech.*, *152*, **2008**, 113–119.

14. G. Menon and R.L. Pego, The scaling attractor and ultimate dynamics for Smoluchowski's coagulation equations, *J. Nonlinear Sci.*, *18*, **2008**, 143–190.

15. G. Menon, B. Niethammer and R.L. Pego, Dynamics and self-similarity in min-driven clustering, *Trans. AMS*, *362*, **2010**, 6591–618.

16. G. Menon and R. Srinivasan, Kinetic theory and Lax equations for shock clustering and Burgers turbulence, *J. Stat. Phys.*, *140*, **2010**, 1195-1223.

17. S.Pandey, M. Ewing, A. Kunas, N. Nguyen, D.H. Gracias and G. Menon, Algorithmic design of self-folding polyhedra, *Proc. Natl. Acad. Sci.*, **2011**, doi: 10.1073/pnas.1110857108.

18. G. Menon, Lesser known miracles of Burgers equation, *Acta Mathematica Scientia*, *32*, **2012**, 281-294.

19. G. Menon, Complete integrability of shock clustering and Burgers turbulence, *Arch. Rat. Mech. Anal.* , *203*, **2012**, pp. 853-882, doi: 10.1007/00205-011-0461-8.

20. G. Menon and M. Hadzic, Gradient flow structure for domain relaxation in Langmuir films, *Quart. App. Math.*, electronically published **2012**.

22. X. Helen Li, G. Menon, Numerical solution of Dyson Brownian motion and a sampling scheme for invariant matrix ensembles, *J. Stat. Phys.*, Vol. 153, **2013**, DOI: 10.1007/s10955-013-0858-x.

23. A. Sageman-Furnas, P. Goswami, G. Menon, S.J. Russell, The Sphereprint: An approach to quantifying the conformability of flexible materials, *Textile Research Journal*, **2013**, DOI: 10.1177/0040517513512402.

24. C. Pfrang, G. Menon and P. Deift, How long does it take to compute the eigenvalues of a random symmetric matrix, *MSRI Publications*, Vol. 63 (Random matrix theory, interacting particle systems and integrable systems), **2014**.

25. P. Deift, G. Menon, S. Olver, T. Trogdon, Universality in numerical computations with random data, *PNAS* , DOI:10.1073/pnas.1413446111, **2014**.

26. R. Kaplan, J.Klobusicky, G. Menon, S. Pandey, Building polyhedra by self-assembly: theory and experiment, *Artificial Life*, DOI:10.1162/ARTL_a_00144, **2014**.

27. S. Pandey, D. Johnson, R. Kaplan, G. Menon, D.H. Gracias, Self-assembly of mesoscale isomers: the role of pathways and degrees of freedom, *PLoS One*, Vol.9, DOI: 10.1371/journal.pone.0108960, **2014**.

28. P. Deift, G. Menon, T. Trogdon, On the condition number of the

critically-scaled Laguerre Unitary Ensemble, *Discrete and Continuous Dynamical Systems*, Vol. 36, No. 8, pp.4287–4347, **2016**.

29. G. Menon The Airy function is a Fredholm determinant. *Journal of Dynamics and Differential Equations*, Vol. 28, No. 3-4, pp.1031–1038, **2016**.

30. X. Li, M.O.Williams, I.G. Kevrekidis, G. Menon, Coarse graining, dynamic renormalization and the kinetic theory of shock clustering, *Nonlinearity*, Vol. 29, No.3, p.947, **2016**.

31. E. Russell and G. Menon, Energy landscapes for the self-assembly of supramolecular polyhedra. *Journal of Nonlinear Science*, Vol. 26, No. 3, pp. 663-681, **2016**.

32. D. Johnson and G. Menon, The building game: from enumerative combinatorics to conformational diffusion. *Journal of Nonlinear Science*, Vol. 26, No.4, pp. 814–845, **2016**.

33. G. Menon and T. Trogdon, Smoothed analysis of the conjugate gradient algorithm. *SIGMA*, Vol. 12, p.109, **2016**.

34. J. Klobusicky and G. Menon, Concentration inequalities for a removal driven thinning process. *Quarterly of Applied Mathematics*, Vol. 4, **2017**.

35. J. Klobusicky, G. Menon and R. L. Pego, Two-dimensional grain boundary networks: stochastic particle models and their kinetic limits. *Archive for Rational Mechanics and Analysis*, Vol. 239, **2021**, pp. 301-305.

36. G. Menon, Information theory and the embedding problem for Riemannian manifolds. *Geometry and Science of Information, GSI '2021*, Springer Lecture Notes in Computer Science. doi:10.1007/978-3-030-80209-7_65.

37. G. Menon, The second law: information theory and self-assembly, Biophysical Journal, Vol. 120, 1-12, Oct. 2021 doi:10.1016/j.bpj.2021.06.028.

5 f. Abstracts

1. G. Menon and R.L. Pego, Scaling dynamics for solvable coagulation equations with dust and gel, *Proc. App. Math. Mech*, *7*, **2007**, 1042901–1042902.

2. G. Menon, A kinetic theory of shock clustering in scalar conservation laws, *Oberwolfach Reports*, *7*, **2010**, 1475-1478.

3. S. Pandey, D. Gracias and G. Menon, Geometric principles for self-folding polyhedra: theory and experiment, *FNANO 2012: Foundations of Nanoscience, Self-assembled architectures and devices* **2012**.

4. G. Menon, Building polyhedra by self-assembly, *Notices of the American Mathematical Society*, Vol. 4, **2017**.

5 g. Invited lectures

2000 AMS meeting, South Bend, IN; Courant Institute, New York University; Mathematisches Forschungsinstitut, Oberwolfach.

2001: Indian Institute of Science, Bangalore; Comenius University, Bratislava, Slovakia; University of Bonn, Germany; University of Maryland, College Park; University of Wisconsin, Madison.

2002: AMS meeting, Madison, WI; Max Plank Institute, Leipzig; Purdue University; University of Chicago.

2003: Fields Institute, University of Toronto; Isaac Newton Institute, Cambridge, UK; SIAM Conference on Dynamical Systems, Snowbird; University of Crete, Heraklion, Greece; University of North Carolina, Raleigh; University of Wisconsin, Madison.

2004: Brown University; École Normale Supérieure, Paris; The Ohio State University, Columbus; SIAM Conference on Materials Science, Los Angeles; Simon Fraser University, Burnaby, BC; Université Pierre et Marie Curie (Paris 6); University of California, Davis; University of Illinois, Urbana-Champaign; University of Massachussets, Amherst; University of Michigan, Ann Arbor; University of Minnesota, Twin Cities; University of Texas, Austin.

2005: AMS meeting, Bowling Green, KY; Brown University; Humboldt

University, Berlin; McGill University; MIT; NJIT; SIAM Conference on Dynamical Systems, Snowbird, UT; University of Arizona,Tucson; University of Bonn; University of Maryland, College Park; University of Zürich.

2006: Boston University; Carnegie Mellon University; Lorentz Institute, University of Leiden; Workshop on non-equilibrium thermodynamics, Rhodes; Mathematisches Forschungsinstitut Oberwolfach; CMS meeting, Toronto.

2007: University of Zürich; Georgia Tech; Mt.Holyoke College; University of Massachussets, Amherst; Cornell University; University of Chicago; Mathematisches Forschungsinstitut Oberwolfach.

2008: Fields Institute, University of Toronto; Indian Institute of Science, Bangalore; SIAM conference on Materials Science, Philadelphia; Indian Statistical Institute, Kolkata; International School for Advanced Studies (SISSA), Trieste, Italy; Harvard University; Yale University.

2009: University of Chicago; Duke University; Georgia Tech; Institute for Pure and Applied Mathematics, UCLA; Center for Applicable Mathematics, Tata Institute of Fundamental Research, Bangalore; Carnegie Mellon University; University of Zürich; University of Colorado, Boulder; SIAM conference on Applications of PDE, Miami.

2010: ICTS, Bangalore; Courant Institute; Mathematisches Forschungsinstitut Oberwolfach; BCAM, Bilbao; SIAM Conference on Nonlinear Waves, Philadelphia; CUNY; Johns Hopkins University; TIFR, Mumbai.

2011: TIFR-CAM, Bangalore; National Science Foundation; Brown University; Courant Institute; FACM 2011, NJIT; Annual meeting, Aust. Math. Soc; University of Sydney; University of Canterbury; National Center for Biological Sciences, Bangalore.

2012: National University of Singapore; Carnegie Mellon University; FNANO 2012, Snowbird, UT; Kavli German-American Frontiers of Science meeting, Potsdam, Germany; University of Warwick; Max-Planck Institute for Mathematics in the Sciences, Leipzig; University of Leipzig; McGill University; IAS-Penn-Rutgers Applied Topology workshop, Ohio State University.

2013: National Science Foundation (BECS PI workshop); Princeton University (applied math colloquium); University of Michigan (conference on random matrix theory).

2014: WPI; University of Maryland; University of Delaware; Stanford University; ICTS, Bangalore; Harvard University; Michigan State University.

2015: University of Arizona; Temple University; University of Pennsylvania; Courant Institute; MIT; Max Planck Institute, Leipzig; TIFR-CAM, Bangalore; Stanford University; University of Minnesota; University of Chicago; MSRI; University of Pittsburgh.

2016: Banff International Research Station (BIRS); Hebrew University, Jerusalem; ETH, Zürich; Benares Hindu University, Varanasi.

2017: CMSA, Harvard University; U. Mass, Amherst; IAS/PCMI summer school, Park City, UT; AMS Fall sectional meeting (plenary); University of Chicago; TIFR-CAM, Bangalore.

2018: Kavli Institute for Theoretical Physics (KITP), UC, Santa Barbara; Duke University; SIAM Conference on Mathematical Aspects of Materials Science; University of Connecticut; Penn State; Institute for Advanced Study.

2019: Carnegie Mellon University; New Jersey Institute of Technology; University of Pennsylvania; Institute for Advanced Study; Renesselaer Polytechnic Institute.

2020: (Invitations only; all talks were cancelled because of Covid-19) University of Minnesota; University of Texas, Austin; SIAM conference on mathematical aspects of Materials Science; Beijing International Center for Mathematical Research; Conference on Foundations of Computational Mathematics (FoCM).

2021: SISSA, Trieste, Italy; American Mathematical Society, Spring Meeting; GSI '2021, Paris; University of Texas, Austin; Special Colloquium, Duke University.

2022: Center for Research in Mathematics, University of Montreal (May); Trends in Calculus of Variations and PDE (virtual meeting, May); University of Washington, Seattle (July); SIAM Annual meeting (July); Temple University (Math Colloquium, October); Purdue University (Applied math seminar, November); Tulane University (Math Colloquium, November).

5i. Work in review

1. N. Cohen, G. Menon and Z. Veraszto, Deep linear networks for matrix completion, *SIAM J. Dynamical Systems*, under review. (Arxiv: 2210.12497)

2. C-P. Huang, D. Inauen and G. Menon , Dyson Brownian motion and motion by mean curvature, *Electronic Communications in Probability*, under review. (Arxiv: 2210.11347).

5j. Work in Progress
1. G. Menon and T. Trogdon, Random matrix theory and numerical linear algebra (book under contract with Springer for publication in the Applied Mathematical Sciences series).

5j. Work in Progress
2. G. Menon, Statistical theories of turbulence (book under contract with Springer for publication in the Applied Mathematical Sciences series).

5j. Work in Progress
3. G. Menon, Thinking machines (book under development based on lectures notes from Pattern theory (APMA 1941 D)) 2016-2023).

6 a. Research grants (current)
PI on National Science Foundation DMS proposal: Renormalization group flows, embedding theorems and applications.

co-PI on National Science Foundation RTG proposal: *RTG: Mathematics of Information, Data, and Applications to Science.* PI is Bjorn Sandstede.

6 b. Research grants (completed)

National Science Foundation, DMS 1714187, 2017-2020. PI for Proposal in Applied Mathematics: *High-dimensional dynamical systems*.

Simons Foundation, Award number 561041: *Random isometric embeddings and turbulence*.

National Science Foundation, DMS 1411278, 2014–2017. PI for Proposal in Applied Mathematics: *Turbulence and Integrability*.

National Science Foundation, DMS 0748482, 2008-2013, PI for Proposal in Applied Mathematics: *CAREER: Scaling and self-similarity in Nonlinear Science– education and research.*

National Science Foundation, EFRI 1022638, 2010-12 PI for Proposal: *BECS: Collaborative Research: Engineering complex self-assembling systems composed of interacting patterned polyhedra: theory and experiments.*

National Science Foundation, DMS 0605006, 2006-2009, PI for Proposal in Applied Mathematics: *Scaling and Infinite Divisibility in Models of Coarsening and Other Dynamic Selection Problems.*

National Science Foundation, DMS 0305985, 2003-2006, Proposal in Applied Mathematics: *Dynamic scaling, coarsening and stability in physical systems.* Subcontract of an award to PI R.L.Pego.

National Science Foundation, DMS 1148284, 2011-2017, co-PI for Proposal in Applied Mathematics: *RTG: Integrating Dynamics and Stochastics (IDyaS)*. PI is Bjorn Sandstede. Other co-PI's are Paul Dupuis, Kavita Ramanan and Boris Rozovsky.

6 c. Research grants (submitted in 2020)

Machine learning for the design of self-folding 3D carbon nanostructures. Dreyfus Foundation.

MURI: *An integrated mathematical framework to engineer robust morphing materials and structures.* (Department of Defense).

7. Service

1. To the University: Committee to Review Tenure and Faculty Development Policies, Fall 2009, Spring 2010, Fall 2010.
2. Committee to Review Child care at Brown, Fall 2012.

3. Rapid Planning Group on Data Science, Spring 2015.

4. Member, Faculty Executive Committee, Fall 2015–Spring 2018.

5. Officer, Faculty Executive Committee, Fall 2020–Spring 2023 (Chair of the FEC/Chair of the faculty in AY 2021-22).

6. Member, Search Committee, Dean of the Faculty, Spring 2022.

7. Member, Search Committee for the 14th Provost of Brown University, Fall 2022.

(ii) To the profession:

Associate Editor, SIAM Journal on Mathematical Analysis, Nov. 2010–Dec. 2019.
Editorial Board, Applied Mathematics Letters, Jan. 2012– 2016.
Editorial Board, Journal of Nonlinear Science, Oct 2012–2016.
Associate Managing Editor, Quarterly of Applied Mathematics, Feb. 2015 – Aug. 2022;
Managing Editor, Quarterly of Applied Mathematics, Aug. 2022–present.
Editorial Board, Physica A, Sept. 2015 –Dec. 2016.

Reviewer for NSF (panelist in 2008, 2010, 2015, 2016, 2017, 2018). Site visit team for review of American Institute of Mathematics (Oct. 2016)

Reviewer: Department of Mathematics, University of California, Berkeley, Oct. 2018.

Reviewer for Mathematical Reviews since 2001.

Referee for the following journals:

Arch. Rat. Mech. Anal., Comm. Math. Phys., Comm. Math. Sci, Comm. PDE, Duke Math. Journal, IMA J. App. Math, J. Diff. Eq, J. Nonlinear Sci., J. Fluid Mech., Markov Processes and Related Fields, Nonlinearity, Quarterly of Applied Mathematics, Physica D, SIAM J. App. Math., SIAM J. Math. Anal., SIAM J. Numer. Anal., Trans. AMS.

Organizer for the following meetings/conferences/workshops:

Conferences at Brown: (1) Lefschetz Center Conference on PDE and Fluids, April 2006; (2) Conference on Nonlinear Waves in honor of Walter Strauss, May 2008; Lefschetz Center Conference on Lattice Differential Equations, Nov. 2009; (4) Young Researchers Meet 2010, May 2010; (5) Conference on

hyperbolic conservation laws and continuum mechanics, May 2011; (6) Mini-workshop on kinetic theory, Feb. 2016. (7) ICERM Spring 2017 program;
Conferences not at Brown: (6) SIAM Conference on Analysis of Partial Differential Equations, Dec. 2015.

Organizer: School and conference on random matrix theory, International Center for Theoretical Science, TIFR , Bangalore, Jan 18–Feb 2, 2012.

Organizer: Mathematics and Materials, School and conference for the Institute for Advanced Study/Park City Mathematics Institute, summer 2014.

Co-chair, SIAM conference on mathematical aspects of materials science, July 2018.

Organizing committee, SIAM annual meeting, July 2018.

Co-chair, SIAM conference on mathematical aspects of materials science, May 2020.

Organized several minisymposia at SIAM meetings.

9. Teaching

Honors Theses directed :
Andrew Furnas, Sc.B in mathematics, 2011.

Nash Rochman, Sc.B in chemical physics, 2013.

Erik Kalosa-Kenyon, Sc.B in applied mathematics-biology, 2015.

Collin Cademartori, Sc.B in mathematics, 2018.

Ph.D Theses directed :
1. Yu-lin Lin, Ph.D in mathematics, 2009

2. Ravi Srinivasan, Ph.D in applied mathematics, 2009.

3. Christian Pfrang, Ph.D in applied mathematics, 2011.

4. Joseph Klobusicky, Ph.D in applied mathematics, 2014.

5. Daniel Johnson, Ph.D in applied mathematics, 2015.

6. Carey Caginalp, Ph.D in applied mathematics, 2017.

7. Vivian Olsiewski Healey, Ph.D in mathematics, 2017.

8. Colin Mc Swiggen (applied mathematics), Ph.D in applied mathematics, 2020.

9. Ching-Peng Huang (applied mathematics), Ph.D in applied mathematics, 2022.

Current Ph.D students.
10. Michael Lee (applied mathematics), 2018–present.

11. Zsolt Veraszto (applied mathematics), 2019–present.

12. Tejas Kotwal (applied mathematics), 2021–present.

13. Tianmin Yu (applied mathematics), 2021-present.

Postdocs mentored:
Xingjie (Helen) Li (2012-5), John Gemmer (2013–2015), David Kaspar (2014 –2017), Samuel Punshon-Smith (2018–2021), Cole Graham (2021-present)

Courses taught.
Fall 2008: APMA 0350 (37 students), APMA 1930H (8 students).

Spring 2009: UTRA with undergraduate Andrew Furnas.

Fall 2009: APMA 2190 (8 students). Independent study with Andrew Furnas.

Spring 2010: APMA 2120 (4 students). Independent studies with (1) Andrew Furnas, (2) Ryan Kaplan and Andrew Kunas.

Fall 2010; APMA 1930I (5 students).

Spring 2011: Independent study, APMA 1970 (4 students). Mathematical problems in materials science, APMA 2821 (6 students).

Spring 2012: Topics in chaotic dynamics, APMA 1360 (7 students); Independent study with Ryan Kaplan.

Fall 2012: Independent study with Nash Rochman.
Spring 2013: Topics in chaotic dynamics, APMA 0360 (38 students).

Spring 2013: Topics in chaotic dynamics, APMA 1360 (10 students).

Spring 2013: Independent study with Nash Rochman.

Fall 2013: Nonlinear dynamical systems, APMA 2190 (12 students); Research in Applied Mathematics (4 students).

Spring 2014: Nonlinear dynamical systems, APMA 2200 (2 students); Research in Applied Mathematics (4 students).

Fall 2014: Methods of applied mathematics, III, APMA 1330 (9 students), Independent Study, APMA 1970 (1 student); Research in Applied Mathematics (3 students).

Spring 2015: Stochastics and Dynamics, APMA 2811 O (5 students); Independent Study, APMA 1970 (1 student); Research in Applied Mathematics (3 students).

Fall 2015: Research in Applied Mathematics (2 students).

Spring 2016: Nonlinear dynamical systems, APMA 2200 (5 students); Statistical theories of turbulence, APMA 2821 X (8 students).

Fall 2016: Information theory, APMA 1710 (26 students).

Spring 2017: Topics in coding theory, APMA 1940V (7 students).

Fall 2017: Information theory, APMA 1710 (33 students).

Spring 2018: Topics in Information theory, APMA 1940X (26 students).

Fall 2019: Information theory, APMA 1710 (34 students).

Spring 2020: An introduction to pattern theory, APMA 1941A (38 students).

Fall 2020: Nonlinear dynamical systems: theory and applications, APMA 2190 (13 students).

Spring 2021: Nonlinear dynamical systems: theory and applications, APMA 2200 (9 students).

Advising duties:

Fall 2004–Spring 2008: Undergraduate committe in applied mathematics.
2009 -2014 (except for sabbatical leave in Fall 2011): Chair of undergraduate committee in applied mathematics, advisor for about 100-150 undergraduates in various applied math programs (applied math, applied math-biology, applied math-computer science and applied math-economics). These advising duties were shared by advisors in applied math and other departments. My role was to serve as concentration advisor to a substantial fraction of students, as well as to coordinate responsibilities with other advisors.