APPENDIX C
Biosketches

This appendix contains biosketches of each of the Curriculum Team members, beginning with the leader Peter Denning and following with the others in alphabetical order: Ravi Athale, Nada Dabbagh, Daniel Menascé, Jeff Offutt, Mark Pullen, Steve Ruth, Ravi Sandhu.

Peter J. Denning

PETER J. DENNING has been Professor of Information Technology and Computer Science at George Mason University since 1991. He came to GMU as Chair of the Computer Science Department and as Associate Dean for Computing. In summer 1993 he started the Center for The New Engineer, which is devoted to developing technologies to support new approaches to engineering education for the 21st century. There he produced several innovations including a new course on the human practice of engineering design, on- line hyperlearning tutorial modules and certifiers in various topics, and new ways of managing courses for greater learning effectiveness. He also served as vice provost for continuing professional education during 1997-98.

Denning was the founding Director of the Research Institute for Advanced Computer Science (RIACS) at the NASA Ames Research Center in Mountain View, California, where he organized research teams that worked closely NASA scientists on computational science, telescience, learning systems, virtual reality, and high performance computing and communications. He served in that capacity from 1983 to 1990, when he stepped down and became Research Fellow until August, 1991.

Before accepting the RIACS assignment, Denning was Head of the Computer Sciences Department at Purdue University, where he was a Professor of Computer Sciences from 1975 and an Associate Professor from 1972. He was an Assistant Professor of Electrical Engineering at Princeton University from 1968. He received the Ph.D. and S.M. degrees from M.I.T.'s Electrical Engineering Department in 1968 and 1965, respectively, with a specialization in computer system resource allocation. He received a BEE degree from Manhattan College in 1964.

Denning was one of the four cofounders of the CSNET, which began with NSF support and evolved into the first fully self-supporting community network. He was chair of the CSNET executive committee from 1982-85. CSNET is a predecessor of NSFNET and NREN and marked the beginning of the transition from the old, closed ARPANET, to the modern, open Internet.

Denning's primary research interests are operating systems, workflow systems, system performance modeling, computer systems architecture, computer security, educational technology, parallel computation, peformance modeling, and organizational informatics. He has worked with people in various engineering and science disciplines (aero, civil, electrical, mechanical, physics, chemistry, biology, earth sciences, and management). He has published over 270 papers and articles since 1967. His pioneering work on virtual memory systems helped make virtual memory a permanent part of modern operating systems. His book with E. G. Coffman, Jr., Operating Systems Theory, was published by Prentice-Hall in 1973 and is still widely used today. His book with Jack Dennis

and Joseph Qualitz, Machines, Languages, and Computation, was published by Prentice-Hall in 1978. His edited collection, Computers Under Attack: Intruders, Worms, and Viruses, published by Addison-Wesley in 1990, has sold over 20,000 copies; he completed a second collection with Dorothy Denning, entitled Internet Besieged. He edited Beyond Calculation: The Next 50 Years of Computing, which was published by Copernicus Press in March 1997 as part of the ACM 50th anniversary celebrations. He also edited a sequel, Talking Back to the Machine, which was published in May 1999. He is working on three more books: a new edited collection for ACM about the future of computing "after cyberspace"; a manifesto for the IT profession with advice to the young professional on how to think and act successfully; and a book on the great, timeless principles of information technology.

Denning was the President of the 80,000-member Association for Computing (ACM) 1980-82. He has participated actively in the ACM since 1968, where he has served as chairman of SIGOPS (1969), Chairman of the Board on Special Interest Groups (1970-74), Member-at-Large of Council (1974-78), and Vice President (1978-80). He served as chairman of the Task Force on the Core of Computer Science (1986-88). He served as Chair of the ACM Editorial Committee (1986-92). He was elected Chair of the Publications Board (1992-98), a position equivalent to vice president for publications. In December 1994 ACM, under his leadership, the Board released an ambitious plan for electronic publishing together with groundbreaking new copyright policies for digitial media. In 1997, his team delivered the ACM Digital Library, which quickly became the core of ACM's services to its members and was the first complete digital library among the scientific societies. He was appointed Chair of the ACM Education Board in 1998, quickly put together a strategic plan for education, and mobilized support for ACM to become the US distributor of the acclaimed International Computer Drivers License. In 1999, he organized the ACM IT Profession Initiative and became the first chair of the initiative's steering committee. He also helped plan and launch Ubiquity, ACM's on-line magazine and forum for the IT Profession.

Denning served as Editor-in-Chief of the Communications of ACM 1983-92, which under his guidance became the leading technical magazine in computing. He continues as contributing editor of the Communications. He served as Consulting Editor for Computer Science for the MIT Press for many years. He has been Editor-in-Chief of ACM's Computing Surveys and Editor of the Elsevier / North-Holland Series on Operating and Programming Systems. He was writer of the column, ``The Science of Computing,'' in American Scientist, which in 47 installments from 1985 to 1993 conveyed the nature and intellectual substance of computer science and engineering to the larger technical community before such efforts were fashionable.

Denning has received many awards. He received a teaching award from Princeton University (1971) and an ACM service award (1974). He holds two best paper awards, one for "The working set model for program behavior," published in Communications of ACM in May 1968, and the other for "Operating systems principles and undergraduate computer science curricula," published in

Proceedings of the Spring Joint Computer Conference in 1972. In 1981 he was elected to the grade of Fellow in IEEE (Institute for Electrical and Electronics Engineers) for "contributions to the understanding of virtual memory systems and the development of the working set concept." In 1984 he was elected a fellow of the American Association for the Advancement of Science (AAAS) "for outstanding contributions to computer systems development and computer security, and for service to the profession and to his professional society." In 1984 he received an honorary Doctor of Laws degree from Concordia University. In 1985 he received an honorary Doctor of Science degree from Manhattan College. In 1989 he received the Computing Research Associations's distinguished service award. In 1990 he received the Distinguished Service Award from ACM. In 1992 he received a centennial engineering award from Manhattan College. In 1993 he was elected in the first group of ACM Fellows. In 1996 he received the prestigious ACM Karl Karlstrom Outstanding Educator Award for "his long-standing efforts to shape our field, convey its nature to the broader scientific community, a core curriculum on operating systems, and a core curriculum for the discipline." In 1998 He received the ACM Outstanding Contribution Award for many years of leadership and for leadership of the digitial library project. In 1999 he received the ACM SIGCSE Outstanding Computer Science Educator Award for many years of contribution to the core identity of computing and the core curriculum.

After hours, he is a former wine connoisseur, a cyclist, a hiker, and a swimmer. He was a member of the Board of Directors and Secretary of the Philharmonia Baroque orchestra (1987-91), and a supporter of several other music and education organizations.

Ravi Athale

RAVI ATHALE received his B.Sc.(1972) from University of Bombay and M.Sc (1974) from Indian Institute of Technology, Kanpur, both is Physics. He finished his Ph.D. (1980) in Electrical Engineering from University of Calif., San Diego. From 1981 to 1985 he worked as a Research Physicist at US Naval Research Laboratory, in Washington, DC. His areas of research were optical signal and image processing systems. From 1985 to 1990 he was a Senior Principal Staff Member at BDM Corporation in McLean, VA, where he headed a group in Optical Computing. His research there was in optical interconnects and multistage switching networks and optical neural network implementations. Since 1990 he has been an Associate Professor in the Electrical and Computer Engineering Department at George Mason University, in Fairfax, VA. His research at GMU has been in the area of fiber optic signal processing and analysis of fundamental limitations in optical interconnection networks.

Dr. Athale was elected Fellow of the Optical Society of America in 1989 and he is a member, Lasers and Electro-Optics Society, IEEE. He chaired the first two topical meetings on Optical Computing in 1985 and 1987 and edited Critical Review of Technology volume on Digital Optical Computing, 1990 published by SPIE. In 1992 he founded in 1992, under DARPA sponsorship Consortium for Optical and Optoelectronic Technologies in Computing (CO-OP). CO-OP, which he has directed since then, is a unique experiment in transitioning emerging device technologies to the user and systems research community at large. It has been responsible for organizing in cooperation with Lucent Bell Labs the first multi-project foundry run for hybrid integrated optoelectronic device technology (CMOS-Multiple Quantum Well hybrid devices). His current research interests include optical interconnections and switching and hybrid digital/optical imaging systems.

At George Mason University, Dr. Athale was a joint developer of a freshman introductory course for Electrical Engineering students, which focused on Information Technology aspects of EE. He is currently developing a new course on Principles of Information Technology, which is aimed at non-science/engineering major students and is a part of the Information technology minor at George Mason University.

Nada Dabbagh

NADA DABBAGH is an Assistant professor in the Instructional Technology program at George Mason University. She teaches graduate courses in Instructional Design, Web-Based Instruction, Applied Psychology, and Technology Integration. Her main research interests are: the design and evaluation of Web-Based Instruction (WBI), problem generation and representation in Problem-Based Learning (PBL), and the contextualizing of instruction through Constructivist Learning Environments (CLE).

Dabbagh received her doctorate in Instructional Systems Design (INSYS) from The Pennsylvania State University in August of 1996. During her doctoral program she worked for the Applied Research Laboratory at Penn State in the capacity of a senior training specialist, developing interactive, multimedia-based training modules (CBT) for the Warner Robins air force base. Prior to enrolling in the INSYS doctorate program, she was an instructor in Computer Science at The Pennsylvania State University for six years. She taught courses in fundamentals of computing and algorithm development to liberal arts, business, and engineering students.

Prior to joining the faculty at George Mason University Dabbagh was awarded a technology fellowship in the Center of Instructional Advancement and Technology (CIAT) at Towson University. She designed and developed a problem-based learning environment that exposes students to the contextual and problem-solving nature of the process of Instructional Design. This research effort is on-going with the goal of building a Web-supported database of problem-based case scenarios to support the teaching and learning of Instructional Design through authentic contexts. Currently, she is working on evaluating the pedagogical effect of traditional courses that have been redesigned for online delivery using Web-based Course Authoring tools. She recently published an article and a book chapter that articulate her findings on this issue.

Another area of interest is applying knowledge management principles to the design of learning environments. Due to the proliferation of design models, learning paradigms, and development tools, and the eclectic nature of the field of Instructional Design (ID), resources are ubiquitous but difficult to access. A centralized and contextualized approach to integrating the required knowledge and skills of ID is needed in order to successfully address instructional design situations. Dabbagh is currently working on the development and subsequently the utilization of a Web-supported knowledge base on instructional design as a support mechanism for teaching, learning, creation and dissemination of related content in the field. The ID knowledge base provides a vehicle for students, faculty and practitioners in the field to access, synthesize and contribute information related to the instructional design process.

Daniel A. Menascé

Daniel A. Menascé is a Professor of Computer Science at George Mason University, Virginia where he is also the co-director of the E-Center of Excellence in Research and Education in E-Business. He received a Ph.D. in Computer Science from the University of California at Los Angeles (UCLA), in 1978. In 1997, he was inducted as Fellow of the Association for Computing Machinery (ACM) for "outstanding technical and professional achievements in the field of information technology." In 1998, he was elected a member of IFIP's working group 7.3 for his "contributions and accomplishments in the field of performance evaluation." Professor Menascé held visiting faculty positions at the University of Maryland at College Park and at the University of Rome, Italy. He published over 110 technical papers in refereed archival journals and conference proceedings and was the chief author of five books, including "Scaling for E-business: technologies, models, performance, and capacity planning," "Capacity Planning for Web Performance: metrics, models, and methods," and "Capacity Planning and Performance Modeling: from mainframes to client-server systems", published by Prentice Hall in 2000, 1998, and 1994, respectively. His research has been funded by DARPA, NASA, the National Science Foundation, Virginia's Center for Innovative Technology (CIT), OPNET Technologies, Hughes Applied Information Systems, the Brazilian Telecommunications Company, the Brazilian Research Council (CNPq), the Brazilian Ministry of Science and Technology, and IBM Brazil. Menascé was the recipient of various prizes, teaching awards, and best paper awards including a Best Paper Award in the 1997 Computer Measurement Group (CMG) Conference and the Outstanding Paper Award in the 1995 IEEE International Conference on the Engineering of Complex Computer Systems.

Menascé has consulted in the areas of performance modeling; capacity planning of e-commerce and Web sites, network environments, and mainframes; and software performance engineering, for SABRE, IBM, iXL, Capital One, TIS Labs at Network Associates, Hughes Applied Information Systems, Lockheed Martin, the Defense Information Systems Agency (DISA), the Ballistic Missile Defense Organization, US Mint, the US Army, NASA, the Center for Excellence in Space Data Information Systems, the National Institutes of Health, and the InterAmerican Development Bank.

Menascé was one of the 40 international researchers invited to attend the one-week meeting at the Schloss Dagstuhl in Germany in 1997 to discuss the origins and directions of the field of performance modeling of computers and communication networks. He is the program chair of the research track for CMG's 2000 conference and the program co-chair of the Workshop on Software and Performance (WOSP 2000), Ottawa, September 2000. Menascé was the General Chair for the ACM Sigmetrics 1999 conference and the tutorial chair for the ACM Sigmetrics 1998 conference.

Menascé has been invited to give tutorials on performance evaluation, capacity planning, and software performance engineering at several international forums, including CMG, Orlando, 2000; ACM Electronic Commerce Conference,

Minnesota, 2000; CMG-Italy, Milan, 2000; CMG, Reno, 1999; USENIX, New Orleans, 1998; ACM Sigmetrics, Seattle, 1997; CMG, Nashville, 1995; ACM Sigmetrics, Ottawa, Canada, 1995; Performance Tools, Heidelberg, Germany, 1995; and DB Forum, Brazil, 1995. He has also taught two and three day workshops through Demand Technologies. He was the keynote speaker at Oracle's Symposium on Systems and Performance, July 1999 and is a special speaker at OPNETWork2000, August 2000, and an invited speaker at the 8th International Workshop on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2000), September 2000.

A. Jefferson Offutt

A. JEFFERSON OFFUTT is an Associate Professor in the Department of Information and Software Engineering at George Mason University. He teaches MS and PhD courses in Software Engineering and has developed new courses in a variety of Software Engineering subjects, including software testing, construction, design, user interface design, experimentation, and analysis.

His current research interests include program testing and automatic test data generation, object-oriented program analysis, module and integration testing, software architecture-based system testing, formal methods, and change-impact analysis. He has published over fifty research papers in refereed computer science journals and conferences and has received funding various government agencies and companies. His current projects include NSF funded research to develop new algorithms for automatic test data generation, methods for integration testing, technology transition of mutation testing, and Rockwell-Collins funded research to derive tests from formal specifications of safety critical software.

Dr. Offutt received a BS degree with a double major in mathematics and data processing from Morehead State University, Morehead, KY, in 1982, an MS degree in Computer Science from the Georgia Institute of Technology in 1985, and a PhD in Computer Science from the Georgia Institute of Technology in 1988. From 1988 to 1992, Offutt was an Assistant Professor in the department of Computer Science at Clemson University.

Offutt has worked on the Software Test and Evaluation Project, for Georgia Tech's Software Engineering Research Center, and helped design and implement the Mothra mutation testing system. His doctoral research was a method for automatically generating test data to satisfy mutation analysis and included algorithms and an implementation of an automatic test data generator that is integrated with the Mothra system. He has also designed mutation operators for the Ada programming language.

Offutt's research was first piqued as an undergraduate student as a result of frustrations with the limitations of technology for designing, writing, debugging and testing software. This turned into a strong interest in educational and research aspects of software engineering early in his graduate studies, and he was one of the first PhD students at Georgia Tech to specialize in Software Engineering. He specialized in teaching undergraduate and graduate courses in Software Engineering while at Clemson University, and has been part of the MS program in Software Engineering at George Mason since 1992. Thus, Offutt has been active as an educator and researcher in Software Engineering for 20 years.

J. Mark Pullen

J. MARK PULLEN is an Associate Professor of Computer Science and a member of the C3I Center at George Mason University, where he heads the Networking and Simulation Laboratory. He holds BSEE and MSEE degrees from West Virginia University, and the Doctor of Science in Computer Science from the George Washington University. He is a licensed Professional Engineer and a Fellow of the IEEE. Prior to joining the GMU faculty he was an officer in the U.S. Army, in which capacity he served four years on the faculty of the U.S. Military Academy at West Point, New York and seven years at the Defense Advanced Research Projects Agency (DARPA). At DARPA he managed programs in high performance computing, networking, and simulation. Dr. Pullen teaches courses in computer networking, and has active research projects in networking for distributed virtual simulation and networked multimedia tools for distributed education. Dr. Pullen received the IEEE's Harry Diamond Memorial Award for his work in networking for distributed simulation.

Stephen R. Ruth

STEPHEN R. RUTH is Professor of Technology Management in the School of Public Policy at George Mason University, and Director of the International Center for Applied Studies in Information Technology (ICASIT). His research interests are focused on the problems of strategic planning associated with leveraging the use of Information Technology in large organizations, with particular emphasis on the effect of Knowledge Management policies on the work of dispersed teams. Ruth's consultancies include National Archives and Records Administration, PriceWaterhouse Coopers, American Management Systems, Inc., Carolina Population Center at University of North Carolina, Johns Hopkins School of Public Health, Ateneo S.A.(Argentina), National Training Laboratories, The World Bank, Soros Foundations, Andrew W. Mellon Foundation, United Nations Development Programme, Navy War College, General Services Administration, Fairfax County (Virginia), and others.

As director of ICASIT, Professor Ruth has received grant and contract awards totaling over $6 million and is also Associate Director of the Commonwealth of Virginia's $2 million Internet Technology Innovation Center project, which links Virginia's university research centers to the high tech businesses in the state. His international IT projects cover over twenty sites in Africa, Asia, South America and Eastern Europe. He has been Chair, Technical Committee on Personal Computing, IEEE Computer Society, and was elected to a three year term to the American Association for the Advancement of Science's (AAAS) Council of Affiliates for International Programs. He has also served as Vice President of the American Society for Cybernetics and on the Board of Advisors for the Czech Management Center, an MBA-granting school near Prague affiliated with the University of Pittsburgh. Ruth served for ten years as a Distinguished Lecturer for the Association for Computing Machinery and was selected for two senior Fulbright lectureships, both in Argentina. He has received a Distinguished Professor award at George Mason University, and was a Virginia Outstanding Professor honoree, with a prize of $5,000.

Dr. Ruth received his BS from the U.S. Naval Academy and MS from the Navy Postgraduate School, and served twenty-three years in the Navy, retiring with the rank of Captain. His PhD is from the Wharton School, University of Pennsylvania. He is author or co-author of over one hundred published articles and four books.

Ravi Sandhu

RAVI SANDHU is Professor of Information and Software Engineering and Director of the Laboratory for Information Security Technology (<www.list.gmu.edu>) at George Mason University. He earlier served on the Computer and Information Science faculty at Ohio State University in Columbus. He holds PhD and MS degrees from Rutgers University, and BTech and MTech degrees from IIT Bombay and Delhi respectively.

His principal research and teaching interests are in Information and Systems Security. He teaches several popular graduate-level security courses at GMU and has lectured all over the world on this topic. He has published over 130 technical papers on computer security in refereed journals, conference proceedings and books. He is the founding editor-in-chief of the ACM Transactions on Information and Systems Security (TISSEC), and is security editor for IEEE Internet Computing. He has served on numerous program and conference committees for security related conferences, and also as program chair and general chair on several occasions. He founded the ACM Conference on Computer and Communications Security and the ACM Symposium on Access Control Models and Technologies, and continues to chair their steering committees. He is currently Chairman of ACM's Special Interest Group on Security Audit and Control (SIGSAC). He has provided high-level security consulting services to numerous private and government organizations including AT&T, Bell Atlantic, IRS, Lockheed Martin, Lucent, Network Associates, NIST, NRL, NSA, Sandia National Laboratories, SETA Corporation and the State Department. His research has been funded by NSF, NSA, NIST, DARPA, DOD, DOE and Lockheed Martin.

Dr. Sandhu is a leading authority on access control and authorization models. He has published extensively in this arena. Most recently he is known for his work in role-based access control (RBAC). His group at GMU has been prolific in RBAC, producing three PhD theses so far with several others in the pipeline. He has collaborated very closely with NIST in this endeavor, and is currently working with NIST scientists to formulate a standard RBAC model. He is also a leading authority on database security. In a recent project for Lockheed Martin he developed a set of architectures for secure content dissemination with applications in the secure electronic commerce and intelligence communities. His most recent research thrust is on the four-layer OM-AM framework for engineering cyberspace security comprising objective, model, architecture and mechanism layers.