

**BILAL M. AYYUB, PhD, PE**  
**BMA ENGINEERING, INC.**  
**11429 PALATINE DRIVE, POTOMAC, MD 20854**

## Education

Doctor of Philosophy, Civil Engineering, 1983, Georgia Institute of Technology, Atlanta.  
Master of Science in Civil Engineering, 1981, Georgia Institute of Technology, Atlanta.  
Bachelor of Science in Civil Engineering, 1980, University of Kuwait.

## Academic Experiences

Professor of Civil and Environmental Engineering, University of Maryland, College Park, MD, 1993-present.

- Director, Center for Technology and Systems Management\*, a University of Maryland research center with a strategic alliance with the US Coast Guard and US Navy, 1996-present.
- Group Leader of Project Management, University of Maryland, 1997-present.
- Sabbatical leave with the CDNSWC of the U.S. Navy, Carderock, MD, 2000-01.
- Sabbatical leave with the CDNSWC of the U.S. Navy, Carderock, MD, 1993-94.
- Consulting Professor, CDNSWC of the U.S. Navy, Carderock, MD, 1994-present.

Consultants to various governmental agencies and corporations as described in the section Other Funded Research Projects.

Associate Professor of Civil Engineering, University of Maryland, College Park, MD, 1988-93.

- Group Leader of Structures in Civil Engineering, University of Maryland, 1990-92.

Assistant Professor of Civil Engineering, University of Maryland, College Park, MD, 1983-88.

Lecturer, Department of Civil Engineering, University of Maryland, College Park, MD, 1983.

Instructor (part-time), University College, University of Maryland, College Park, MD, 1983-84.

Laboratory Engineer, Department of Civil Engineering, University of Kuwait, Kuwait, 2/80 to 6/80.

\* A web page is available for this activity through a link from <http://ctsm.umd.edu/ayyub>

## Awards and Honors

BSCE with the first honor degree.

The Kuwait Foundation for the Advancement of Science Fellowship for the MSCE and PhD degrees, 1980-83.

The "Jimmie" Hamilton Award for the best paper in the Naval Engineers Journal during 1985, American Society of Naval Engineers.

The award for "The Outstanding Research Oriented Paper" published in the Journal of Water Resources Planning and Management in 1987, Water Resources Planning and Management Division, American Society of Civil Engineers.

The Edmund Friedman Young Engineer Award for Professional Achievement, American Society of Civil Engineers, 1989.

The "Jimmie" Hamilton Award for the best paper in the Naval Engineers Journal during 1992, American Society of Naval Engineers.

U.S. Army Corps of Engineers Award in recognition of contributions to the success of the 1995 Corps of Engineers Structural Engineering Conference, Fort Worth District, San Antonio, Texas, 1995.  
 The K.S. Fu Award for Professional Service, the North American Fuzzy Information Processing Society, 1995.  
 The Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers, 1997.  
 Certificate of Appreciation, Research Task Force on Risk-Based Inspection Guidelines, the American Society of Mechanical Engineers, 1998.  
 Certificate of Appreciation from the Risk-based Technology Research Committee of the American Society of Mechanical Engineers (ASME) for contribution to several ASME research projects on risk-based inspection of industrial facilities, risk-informed design of mechanical systems, and applications of risk-based technology to U. S. Coast Guard marine systems, 1998.  
 Certificate of Appreciation for Contributions to the Classification Guide of the Mobile Offshore Base, Office of Naval Research, Science and Technology Program, U. S. Navy, 1999.  
 Fellow, American Society of Civil Engineers, 1999.  
 Fellow, American Society of Mechanical Engineers, 2000.  
 Fellow, Society of Naval Architects and Marine Engineers, 2000.  
 The "Jimmie" Hamilton Award for the best paper in the Naval Engineers Journal during 2000, American Society of Naval Engineers.

## **Professional Service**

American Society of Civil Engineers (ASCE), Fellow, member since 1981.

- Member of the ASCE Committee on Forensic Engineering, 1984-88.
- Member of the ASCE Committee on Practices to Reduce Failures, 1984-88.
- Member of the ASCE STD Committee on Safety of Buildings, 1986-89.
- Member of the ASCE STD Committee on Reliability of Offshore Structures, 1987-93.
- Control group member of the ASCE STD Committee on Reliability of Offshore Structures, 1991-93.
- Vice-Chairman of the ASCE STD Committee on Reliability of Offshore Structures, 1992-1993.
- Chairman of the ASCE STD Committee on Reliability of Offshore Structures, 1993-1996.
- Member of the ASCE EMD Committee on Probabilistic Methods, 1989-96.
- Member of the ASCE STD Committee on Fatigue Reliability, 1995-1998.
- Associate Editor, J. of Structural Engineering, ASCE, 1995-98.
- Member of the ASCE Committee on Petro-Chemical Energy, Energy Division, ASCE, 1991-92.
- Non-member Advisor, Task Committee on Probabilistic Approaches to Maintenance of Hydraulic Structures, ASCE, 1989-90.
- Chairman of the Education Committee, ASCE Maryland Section, 1990-92.
- Organized the seminar "The Engineer as a Manager," Education Committee, ASCE - Maryland Section, Baltimore, Maryland, May 10, 1991.
- Organized and chaired several sessions in ASCE Structures Congress, and Specialty Conferences, since 1990.

American Concrete Institute (ACI), Member, 1983-present.

- Member of the ACI Committee 348 on Structural Safety, 1986-92.
- Member of the ACI 348 Subcommittee A on Probability-Based Building Code, 1986-92
- Member of the ACI 348 Subcommittee C on Long Term Serviceability/Safety of Structures, 1986-92.
- Member of the ACI 348 Subcommittee D on Construction, 1986-92.

American Society of Naval Engineers (ASNE), Life Member, 1985-present.

- Member of the Naval Engineers Journal Committee, ASNE, 1990-present.
  - Chair of the Naval Engineers Journal Committee, ASNE, 2000-present.
- American Society of Mechanical Engineers (ASME), Fellow member since 1990.
- Representative of Academic Institutions on the ASME Research Task Force on Risk-Based Inspection of Industrial Facilities, 1987-present.
  - Member of Applied Risk Committee, ASME, 1989-present.
  - Member of the ASME Committee on Human Factors Engineering, Safety Engineering and Risk Analysis Division, 1990-present.
  - Member of the ASME Research Committee on Risk-Based Technology, 1993-96.
  - Member of the ASME Ad Hoc Task Group on Risk-based Technology (SG-D Section III), 1996-97.
- American Society of Engineering Education (ASEE), Member, 1990-present.
- Member of the Conference Committee, Fall meeting of the Middle Atlantic Section of ASEE, November 1991.
- Post-Tensioning Institute, Professional Member, Phoenix, Arizona, 1987-1990.
- Society of Naval Architects and Marine Engineers (SNAME), Fellow, member since 1989.
- Chairman of the Panel on Design Procedures & Philosophies for Ship Structures (HS-4), 1996-present.
  - Committee member, the Journal of Ship Research, SNAME, 1997-present.
- Institute of Electrical and Electronics Engineers, Senior Member, 1995-present.
- Member of the Computer Society (IEEE-CS), 1993-95.
- North American Fuzzy Information Processing Society, Member, Binghamton, New York, 1990-present.
- General Chairman, the Annual Conference of the North American Fuzzy Information Processing Society, University of Maryland, College Park, September 1995.
- American Academy of Mechanics, Member, 1988-present.
- The U. S. Naval Institute, Life Member, 1988- present.
- Washington Institute for Operations Research and Management Science (WINFORMS), Member, 2002-present.
- Society for Risk Analysis, Member, 2002-present.
- World Future Society, Member, 2002-present.
- Sigma Xi, the Scientific Research Society, Member, New Haven, CT, 1988-2000.
- Engineers-In-Training License, The State of Maryland, July 1985-88.
- Professional Engineer Registration, State of Maryland, License Registration Certification Number 16521, July 1988 - present.
- The Center for Reliability Engineering, Member, Department of Nuclear Engineering, University of Maryland, College Park, MD, faculty member, 1986-present.
- The International Symposium on Uncertainty Modeling and Analysis\*, Organizer, 1989- present.
- General Chairman, The First International Symposium on Uncertainty Modeling and Analysis (ISUMA'90), University of Maryland, College Park, MD, December 1990.
  - Organized and chaired several sessions in ISUMA'90, College Park, MD.
  - General Chairman, The Second International Symposium on Uncertainty Modeling and Analysis (ISUMA'93), University of Maryland, College Park, MD, April 1993.
  - Organized and chaired several sessions in ISUMA'93, College Park, MD.
  - General Chairman, the third International Symposium on Uncertainty Modeling and Analysis (ISUMA'95), University of Maryland, College Park, September 1995.
- The International Association for Structural Safety and Reliability, Member (by invitation), USA, Japan, Austria and others, Organizer of the International Conference on Structural Safety and Reliability (ICOSSAR), 1988-present.

- Member of the Scientific Committee for ICOSSAR'93, Austria.
- Session Chairman, Session I, ICOSSAR'93, Austria.
- Session Chairman, Session II, ICOSSAR'93, Austria.
- Member of the Scientific Committee for ICOSSAR'97, Japan.
- Member of the Scientific Committee for ICOSSAR'01, USA.

The National Competition "Odyssey of the Mind," Advisor to the Glenarden Woods Elementary School, Lanham, Maryland, 1987.

Member of the International Advisory Committee for the International Workshop on Reliability of Offshore Operations, US National Institute of Standards and Technology, Gaithersburg, MD, US Mineral Management Service, Department of Interior, VA, March 1991.

Senior Mentor for a Lilly Teaching Fellow, Dr. Nabil Kartam, for the 1990-91 academic year.

Session Chairman, "Fuzzy Systems/Artificial Intelligence A," Canadian Conference and Exhibit on Industrial Automation, Montreal Canada, June 1-3, 1992.

Member of the Technical Program Committee for the Second International Conference on Probabilistic Safety Assessment and Management (PSAM II), San Diego, CA, March 1994.

Listed in the Marquis Who's Who.

- Who's Who in America, since 1998.
- Who's Who in the World, since 1995.
- Who's Who in Science and Engineering, since 1994.
- Who's Who in Finance and Industry, since 1996.
- Who's Who in American Education, since 1996.
- Who's Who in the East of the United States, since 1997.

Arab Scientists and Technologists Abroad (ASTS), member since 1992.

- Invited to attend the First Congress of ASTA, Amman, Jordan, funded by the National Science Foundation (NSF) and the United Nations Education, Scientific and Cultural Organization (UNESCO) among others, through the University of Illinois at Urbana-Champaign, IL, 1992.
- Co-chairman of the Workshop on Infrastructure, Earthquake Engineering and Standards, the Second Congress of ASTS, Amman, Jordan, funded by NSF and UNESCO among others, through the University of Illinois at Urbana-Champaign, IL, 1994.
- Invited panelist on Inter-university Cooperation, the First TSS/ASTA International Conference on Technology Parks and Transfer of Knowledge, ASTS, Tunis, funded by UNESCO, through the University of Illinois at Urbana-Champaign, IL, 1996.

National Research Council, Marine Board, Washington, DC.

- Member of the Design Work Group, Marine Structures Committee, 1994-1998.
- Steering Committee Member, and Recorder for the Design Session, the Workshop and Symposium on the Prevention of Fracture in Ship Structures, Washington, DC, March 1995.
- Reviewer of the final report of "Application of Reliability Methods to Analysis and Design of Marine Structures," the Marine Board, Commission on Engineering and Technical Systems, Washington, D.C., 1987.

US Coast Guard, and the American Society of Mechanical Engineers, Washington, DC.

- Chair of the organizing committee for the Workshop on Risk-based Technologies: US Coast Guard Applications, December 12-13, 1995. The workshop was funded by the US Coast Guard. About 100 people attended the workshop. ASME published the proceedings.

United Nations Development Fund (UNDP).

- Volunteer (with expenses paid by the UNDP) to assist the Palestinian Ministry of Housing with housing issues through the TOKTEN program, June/July 1996.

## **Editorial and Reviewing Activities**

Reviewer of research proposals, The National Science Foundation, Washington, D.C., 1984-96.  
Reviewer of publications for the ASCE through its committees.  
Reviewer of publications for the ACI through its committees.  
Reviewer of research projects, Committee on Marine Structures, Marine Board, National Research Council, Washington, D.C., 1988.  
Reviewer of technical papers for the international journal of Structural Safety, Elsevier Science Publishers.  
Member of the Naval Engineers Journal Committee, American Society of Naval Engineers, Alexandria, Virginia, 1990-present.  
Member of the editorial board of the international Journal of Grey Systems, UK, 1990-92.  
Reviewer of technical papers for the international journal of Probabilistic Engineering Mechanics, Elsevier Science Publishers.  
Associate Editor-in-Chief of the Journal of Grey Systems, UK and PRC, 1991-92.  
Editor of the Journal of Grey System Theory and Practice, PRC, 1991-92.  
Member of the Proposal Review Panel, Structures and Building Systems, National Science Foundation, Washington, D.C., 1992.  
Member of a Peer Review Panel for the Assessment of Projects in the Federal Wind Energy Program of the Office of Renewable Energy Conversion, Department of Energy, 1991.  
An Advisory Editor of the Journal of Fuzzy Mathematics, 1992-1994.  
Reviewer of technical papers for the international journal of Marine Structures, 1993.  
Reviewer of technical papers for the Journal of Ship Research, Society of Naval Architects and Marine Engineers, 1990-present.  
Reviewer of technical papers for the Journal of Experimental and Theoretical Artificial Intelligence, published by Taylor and Francis, UK, 1995-present.  
Reviewer of technical papers for the International Journal on Structural Engineering and Mechanics, published by Techno-Press, Korea, -1995-present.  
Reviewer of technical papers for the Journal of Fuzzy Sets and Systems, 1993-present.  
Reviewer of technical papers for the Journal of Modelling and Simulation, 1996-present.  
Associate Editor of the ASCE Journal of Structural Engineering, 1995-98.  
Member of the Editorial Board of the International Journal of General Systems, Gordon and Breach Science Publishers, since 2000.  
Member of the Editorial Board of the International Journal on Computational Structural Engineering, Editors in Chief are Alfredo H-S. Ang and Hyo-Nam Cho, since 2001.

## **Invited Lectures and Short Courses**

A Two-week short course on structural reliability, Southwestern Jiaotong University, Departments of Applied Mechanics and Civil Engineering, Emei, People's Republic of China, June 10-24, 1985.  
A Lecture on structural reliability, Kuwait Institute for Scientific Research, Building Department, Kuwait, August 17, 1985.  
A Lecture on structural reliability, The Johns Hopkins University, Department of Civil Engineering, Baltimore, Maryland, October 8, 1985.  
Lectures on structural reliability applied to bridge structures at three one-day workshops on reliability engineering, Center of Reliability Engineering, Center of Adult Education, University of Maryland, College Park, Maryland, March 11, March 24 and April 14, 1986.  
A Lecture on Prestressed Composite Steel/Concrete Girders and Welded Steel Mesh in Bridge Decks," Building Department, Kuwait Institute for Scientific Research, Kuwait, July 6, 1987.

Lectures on Structural Reliability and Applications of Fuzzy Sets, David Taylor Research Center, Bethesda, Maryland, February and May 1990.

Lectures on Structural Reliability, Structures Group, Naval Sea System Command, Crystal City, Virginia, November 1989 and July 1990.

A Two-day short course on "Reliability of Structural Components and Systems," with M.H.M Hassan, Maryland Instructional Television and the National Technological University, College Park, MD, July 21 and 22, 1992.

A Review Short Course on the "Principles and Practices of Engineering - Structural Engineering," with D. Suess, The Office of Continuing Education, The University of Maryland, Baltimore County Campus, August 17 - October 14, 1992.

A Lecture on "Structural Reliability Assessment with Ambiguity and Vagueness in Failure," The University of Delaware, Department of Civil Engineering, Newark, DE, December 3, 1992.

A 16-lecture short course on "Reliability Methods for Ship Structures," given to engineers and researchers from the Naval Sea Systems Command, US Navy, Spring 1994.

A 12-lecture short course on "Reliability Methods for Ship Structures," given to engineers and researchers from the Carderock Division of the Naval Surface Warfare Center, US Navy, Winter 1995.

A 12-lecture short course on "Reliability Methods for Ship Structures," given to engineers and researchers from the Naval Sea Systems Command, US Navy, Spring 1995.

A Lecture on the nature of uncertainty in structural engineering, The Johns Hopkins University, Department of Civil Engineering, Baltimore, Maryland, December 5, 1995.

A 3-day short course on "Reliability Methods for Marine Systems," given to engineers and researchers from the Carderock Division of the Naval Surface Warfare Center and the Naval Sea Systems Command, US Navy, Spring 1997.

A Lecture on the nature of uncertainty in structural engineering, The Johns Hopkins University, Department of Civil Engineering, Baltimore, Maryland, 2000.

A lecture on risk methods for ship stability, Naval Stability Standards Working Group Meeting, 4 and 5 December 2001, Wageningen, The Netherlands.

A lecture on risk methods for ship stability, Naval Surface Warfare Center, Carderock Division, 15 January, 2002, Maryland.

## **Publications**

### **Textbooks**

Ayyub, B.M., and McCuen, R., Numerical Methods for Engineers, Prentice Hall, New York, 1996, 362 pages.

Ayyub, B.M., and Assakkaf, I., Solution Manual of the Book Numerical Methods for Engineers by Ayyub and McCuen, Prentice Hall, NY, 1996, 211 pages.

Ayyub, B.M., and McCuen, R., Probability, Statistics and Reliability for Engineers, CRC Press, 1997, 514 pages

Ayyub, B.M., and McCuen, R., Solution Manual of the Book Probability, Statistics and Reliability for Engineers by Ayyub and McCuen, CRC Press, 1997, 163 pages.

Ayyub, B. M., Elicitation of Expert Opinions for Uncertainty and Risks, CRC Press, 2002, 300 pages.

Ayyub, B.M., and McCuen, R., Probability, Statistics and Reliability for Engineers and Scientists, Second Edition, CRC Press, Expected 2002, about 600 pages

### **Edited Books and Conference Proceedings**

Ayyub, B.M. (Editor), Uncertainty Modeling and Analysis, proceedings of the first International Symposium on Uncertainty Modeling and Analysis (ISUMA'90), IEEE-Computer Society Press, Los Alamitos, CA., 1990, 750 pages.

Ayyub, B.M., Gupta, M.M. and Kanal, L.N. (Editors), *Analysis and Management of Uncertainty: Theory and Applications*, published by North-Holland-Elsevier Scientific Publishers, ISBN 0-444-88901, 1992, 428 pages.

Ayyub, B.M. (Editor), *Uncertainty Modeling and Analysis*, proceedings of the Second International Symposium on Uncertainty Modeling and Analysis (ISUMA'93), IEEE-Computer Society Press, Los Alamitos, CA., 1993, 660 pages.

Ayyub, B.M., and Gupta, M.M. (Editors), *Uncertainty Modeling and Analysis: Theory and Applications*, North-Holland-Elsevier Scientific Publishers, 1994, 537 pages.

Ayyub, B.M. (Editor), *Uncertainty Modeling and Analysis*, proceedings of the joint third International Symposium on Uncertainty Modeling and Analysis and the conference of the North American Fuzzy Information Processing Society (ISUMA-NAFIPS'95), IEEE-Computer Society Press, Los Alamitos, CA., 1995, 810 pages.

Haldar, A., Guran, A., and Ayyub, B.M., (Editors), *Uncertainty Modeling in Finite Element, Fatigue, and Stability of Systems*, World Scientific, 1997, 406 pages.

Ayyub, B.M., Guran, A., and Haldar, A., (Editors), *Uncertainty Modeling in Vibration, Control, and Fuzzy Analysis of Structural Systems*, World Scientific, 1997, about 356 pages.

Ayyub, B.M., and Gupta, M.M., (Editors), *Uncertainty Analysis in Engineering and the Sciences: Fuzzy Logic, Statistics, and Neural Network Approach*, Kluwer Academic Publisher, 1997, 370 pages.

Ayyub, B.M., (Editor), *Uncertainty Modeling and Analysis in Civil Engineering*, CRC Press, 1998, 506 pages.

### **Chapters in Books and Thesis**

Ayyub, B.M., *Structural Safety Analysis of Reinforced Concrete Buildings During Construction*, Ph.D. Dissertation, School of Civil Engineering, Georgia Institute of Technology, Thesis Advisor: A. Haldar, December 1983, 350 pages.

Ayyub, B.M., "Generalized Treatment of Uncertainties in Structural Engineering," in *Analysis and Management of Uncertainty: Theory and Applications*, edited by Ayyub, Gupta and Kanal, North-Holland-Elsevier Scientific Publishers, 1992, 235-246.

Hassan, M.H.M, Ayyub, B.M., and Bernold, L. "Fuzzy-Based Real-Time Control of Construction Activities," a chapter contribution to the book *Analysis and Management of Uncertainty: Theory and Applications*, edited by Ayyub, Gupta and Kanal, North-Holland-Elsevier Scientific Publishers, 1992, 331-350.

Alvi, I.A., Lai, K.-L., and Ayyub, B.M., "Probabilistic Analysis of Structures with Vague Failure Modes," in *Analysis and Management of Uncertainty: Theory and Applications*, edited by Ayyub, Gupta and Kanal, North-Holland-Elsevier Scientific Publishers, 1992, 363-384.

Ibrahim, A., and Ayyub, B.M., "Uncertainties in Risk-Based Inspection of Complex Systems," in *Analysis and Management of Uncertainty: Theory and Applications*, edited by Ayyub, Gupta and Kanal, North-Holland-Elsevier Scientific Publishers, 1992, 247-262.

Ayyub, B.M. "The Nature of Uncertainty in Structural Engineering," in *Uncertainty Modelling and Analysis: Theory and Applications*, edited by Ayyub, and Gupta, North-Holland-Elsevier Scientific Publishers, 195-210, 1994.

Hassan, M.H.M, and Ayyub, B.M. "Multi-Attribute Fuzzy Control of Construction Activities," in *Uncertainty Modelling and Analysis: Theory and Applications*, edited by Ayyub, and Gupta, North-Holland-Elsevier Scientific Publishers, 271-286, 1994.

Ayyub, B.M., "Chapter 11. Fuzzy Uncertainty in Computational Stochastic Mechanics," in *Computational Stochastic Mechanics*, edited by A. H-D. Cheng, C.Y. Yang, Computational Mechanics Publications, Elsevier Applied Sciences, U.K., 1993, 239-252.

Ayyub, B.M., and McCuen, R.H., "Chapter 4. Simulation-Based Reliability Methods," in *Probabilistic Structural Mechanics Handbook*, edited by C. Sundararajan, Chapman and Hall, 1995, 53-69.

Ayyub, B.M., and White, G.J., "Chapter 18. Probability-Based Life Prediction," in Probabilistic Structural Mechanics Handbook, edited by C. Sundararajan, Chapman and Hall, 1995, 416-428.

White, G.J., Ayyub, B.M., Nikolaidis, E., and Hughes, O.F. "Chapter 24. Applications in Ship Structures," in Probabilistic Structural Mechanics Handbook, edited by C. Sundararajan, Chapman and Hall, 1995, 575-607.

Johnson, P.A., and Ayyub, B.M., "Chapter 26. Applications in Bridges," in Probabilistic Structural Mechanics Handbook, edited by C. Sundararajan, Chapman and Hall, 1995, 640-649.

Lai, K.-L., and Ayyub, B.M., "Reliability Assessment Using Variance Reduction Techniques based on Fuzzy System Performance," in Reliability and Safety Analysis under Fuzziness, edited by T. Onisawa and J. Kacprzyk, published by Physica-Verlag, 1995, 358-376.

Ibrahim, A., and Ayyub, B.M., "Risk-Based Planning in Inspection of Industrial Facilities," in Reliability and Safety Analysis under Fuzziness, edited by T. Onisawa and J. Kacprzyk, published by Physica-Verlag, 1995, 285-301.

Hassan, M.H.M., and Ayyub, B.M., "Chapter 7. Structural Fuzzy Control," in Uncertainty Modeling in Vibration, Control and Fuzzy Analysis of Structural Systems, edited by Ayyub, Guran, and Haldar, World Scientific, 1997, 179-232.

Chao, R.-J., and Ayyub, B.M., "Chapter 5. Reliability Analysis with Fuzziness and Randomness," in Uncertainty Analysis in Engineering and Sciences: Fuzzy Logic, Statistics, and Neural Network Approach, edited by B. Ayyub and M. Gupta, Kluwer Press, 1997, 69-80.

Chang, Y.-H.O., Ayyub, B.M., "Chapter 12. Hybrid Least Squares Regression Analysis," in Uncertainty Analysis in Engineering and Sciences: Fuzzy Logic, Statistics, and Neural Network Approach, edited by B. Ayyub and M. Gupta, Kluwer Press, 1997, 179-192.

Ayyub, B.M., and Chao, R.-J., "Chapter 1. Uncertainty Modeling in Civil Engineering with Structural and Reliability Applications," in Uncertainty Modeling and Analysis in Civil Engineering, edited by B. Ayyub, CRC Press, 1998, 1-32.

Chang, Y.-H.O., and Ayyub, B.M., "Chapter 2. Hybrid Fuzzy Regression and Its Applications," in Uncertainty Modeling and Analysis in Civil Engineering, edited by B. Ayyub, CRC Press, 1998, 33-42.

Hess, P.E., Bruchman, D., and Ayyub, B.M., "Chapter 14. Uncertainties in Material and Geometric Strength Variables in Marine Structures," in Uncertainty Modeling and Analysis in Civil Engineering, edited by B. Ayyub, CRC Press, 1998, 245-274.

Ayyub, B.M., Patev, R.C., and Leggett, M.A., "Chapter 17. Fatigue Reliability Assessment of Miter Gate Components at Navigation Locks," in Uncertainty Modeling and Analysis in Civil Engineering, edited by B. Ayyub, CRC Press, 1998, 321-336.

Ayyub, B.M., "Chapter 1. Hierarchical Ignorance Categories and Uncertainty Types in Engineering Systems," in Computational Intelligence Applications in Pavement and Geomechanical Systems, Edited by N. O. Attoh-Okine, A. Balkema, Rotterdam, Netherlands, 2000, 1-20.

Ayyub, B.M., and Assakkaf, I., "Chapter 22. Reliability-Based Structural Design," in SNAME Ship Design and Construction, the Society of Naval Architects and Marine Engineers, 2001.

### **Refereed Journals and Publications**

Ayyub, B.M. and Haldar, A., "Project Scheduling Using Fuzzy Set Concepts," Journal of Construction Engineering and Management, ASCE, 110(2), June 1984, 189-204.

Haldar, A., and Ayyub, B.M., "Practical Variance Reduction Techniques in Simulation," Publication PVP-Vol. 93, American Society of Mechanical Engineers, June 1984, 63-74.

Ayyub, B.M., and Haldar, A., "Practical Structural Reliability Techniques," Journal of Structural Engineering, ASCE, 110(8), August 1984, 1707-1724.

White, G.J., and Ayyub, B.M., "Reliability Methods for Ship Structures," Naval Engineers Journal, ASNE, 97(4), May 1985, 86-96, (*Winner of the "Jimmie" Hamilton Award, 1986, ASNE*).

White, G.J., and Ayyub, B.M., "Reliability Methods for Ship Structures, reply by the authors on comments by A. Haldar, A.E. Mansour and A. Sielski," *Naval Engineers Journal*, ASNE, 97(4), July 1985, 79-82.

Ayyub, B.M., and Haldar, A., "Decisions in Construction Operations," *Journal of Construction Engineering and Management*, ASCE, 111(4), December 1985, 343-357.

Ayyub, B.M., and McCuen, R.H., "Quality and Uncertainty Assessment of Wildlife Habitat Based on Fuzzy Sets," *Journal of Water Resources Planning and Management*, ASCE, 113(1), January 1987, 95-109, (**Winner of the Outstanding Research Oriented Paper Award, 1988, WRPMD, ASCE**).

Ayyub, B.M., Aggour, M.S., and McCuen, R.H., "Semivariogram Algorithm for Timber Pile Data Analysis," *International Journal of Software for Engineering Workstations*, 3(1), January 1987, 44-47.

Ayyub, B.M., and White, G.J., "Reliability-Conditioned Partial Safety Factors," *Journal of Structural Engineering*, ASCE, 113(2), February 1987, 279-294.

White, G.J., and Ayyub, B.M., "Reliability-Based Design Formats for Marine Structures," *Journal of Ship Research*, SNAME, 31(1), March 1987, 60-69.

White, G.J., and Ayyub, B.M., "Reliability-Based Fatigue Design for Ship Structures," *Naval Engineers Journal*, ASNE, 99(3), May 1987, 135-149.

White, G.J., and Ayyub, B.M., "Reliability-Based Fatigue Design for Ship Structures, reply by the authors on comments by R. Sielski, P.Y. Chang and A. Thayamballi," *Naval Engineers Journal*, ASNE, 99(4), July 1987, 128-130.

Chang, P.C., Ayyub, B.M., and Al-Mutairi, N., "Moment-Rotation Characteristic of Slabs," *International Journal of Software for Engineering Workstations*, 3(3), July 1987, 124-128.

Chang, P.C., and Ayyub, B.M., "The Influence of Shear Lag on the Vibration of Timoshenko Beam," *International Journal of Structures*, 8(1), January 1988, 1-14.

Ayyub, B.M., "Discussion on Limit State Probabilities for Wood Structural Members, by E. Hendrickson, B. Ellingwood and J. Murphy," *Journal of Structural Engineering*, ASCE, 114(5), May 1988, 1196-1200.

Ayyub, B.M., and Eldukair, Z., "Discussion on A Fuzzy System for Bid Proposal Evaluation Using Microcomputers by C.H. Juang, J.L. Burati and S.N. Kalidindi," *Civil Engineering Systems*, 5(3), September 1988, 164.

McCuen, R. H., Aggour, M.S., and Ayyub, B.M., "Spacing for Accuracy in Ultrasonic Testing for Bridge Timber Piles," *Journal of Structural Engineering*, ASCE, 114(12), December 1988, 2652-2668.

Ayyub, B.M., "RASCs for Risk Assessment," *Technical Note*, *International Journal of Software for Engineering Workstations*, 5(1), January 1989, 45-50.

Ayyub, B. M., Kadissi, R. I., "Failure and Survival Functions for Structural Design Codes," *International Journal of Structures*, Paper No. 92, 9(1), January 1989, 1-23.

Ayyub, B.M., White, G.J., and Purcell, E.S., "Estimation of the Structural Service Life of Boats," *Naval Engineers Journal*, ASNE, 101(3), May 1989, 156-166.

Saadatmanesh, H., Albrecht, P., and Ayyub, B.M., "Experimental Study of Prestressed Composite Beams," *Journal of Structural Engineering*, ASCE, 115(9), September 1989, 2348-2363.

Saadatmanesh, H., Albrecht, P., and Ayyub, B.M., "Analytical Study of Prestressed Composite Beams," *Journal of Structural Engineering*, ASCE, 115(9), September 1989, 2364-2381.

Ayyub, B.M., White, G.J., and Purcell, E.S., "Estimation of the Structural Service Life of Boats, reply by the authors on comments by A. Haldar, A. Malakoff and J.S. Spencer," *Naval Engineers Journal*, ASNE, 101(4), July 1989, 132-134.

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