



**Kailash C. Madan, Phd.  
Professor**

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**Biography:**

Prof. Kailash C. Madan was born in 1942 in Muzaffargarh, Punjab, India. He received his Ph.D. in Mathematics from Kurukshetra University, India in 1976.

Prof. Madan joined Ahlia University in 2003 as a Professor of Mathematics and Statistics. He was Chairman, Department of Mathematics from 2003 to 2005, Dean of the College of Mathematical Sciences and Information Technology from 2005 to 2008. Currently he is Dean of the College of Information Technology.

Prior to joining Ahlia University, Prof Kailash was in Yarmouk University, Jordan as a Professor from 1998 to 2003 and as Associate Professor from

1996 to 1998. Before joining Yarmouk University, Prof Madan was in the Department of Mathematics, University of Bahrain as Associate Professor from 1990-1996 and as Assistant Professor from 1980-1990. Prior to joining the University of Bahrain, Prof. Madan worked as a lecturer/Post-Graduate Teacher/Statistical Assistant in the National Council of Educational Research and Training (NCERT), New Delhi, India from 1966 to 1980.

**Education:**

- Ph. D. in Mathematics /Queueing Theory ( "On Some Problems of Queueing Theory with Special Reference to Queues with Service Interruptions", 1976, Kurukshetra University, Kurukshetra, India, )
- M. A. in Mathematics, 1965, Kurukshetra University, Kurukshetra, India)
- B. A. in Mathematics, 1963, Panjab University, Chandigarh, India)

**Awards:**

Kailash C. Madan was awarded merit scholarships three times for 6 years by the Panjab University, Chandigarh, India and the Government of Panjab, India on the basis of his school level Matriculation examination and two college level examinations, Intermediate Degree as well as Bachelor Degree Examinations.

He was awarded a Research Fellowship by the University Grants Commission, Government of India to undertake his Ph.D. research work at Kurukshetra University, India.

**Research Achievements:****Publications:**

- a) **Articles Published in International Refereed Research Journals**

- 77 Maraghi, Farzana, Madan, Kailash C. and Darby-Dowman, Kenneth**  
**(2008)** : 'Batch Arrival Vacation Queue with Second Optional Service and Random System Breakdowns', Journal of Statistical Theory and Practice (USA).Accepted for Publication, April 2009. To apper in 2010
- 76 Maraghi, Farzana, Madan, Kailash C. and Darby-Dowman, Kenneth**  
**(2008)** : 'Batch Arrival Queueing System with Random Breakdowns and Bernoulli Schedule Server Vacations Having General Vacation Time Distribution', International Journal of Management Sciences and Information Sciences (USA).Accepted for Publication, April 2009. To apper in 2010.
- 75 Maraghi, Farzana, Madan, Kailash C. and Darby-Dowman, Kenneth**  
**(2008)** : 'Batch Arrival Queueing System with Random Breakdowns and Bernoulli Schedule Server Vacations Having General Vacation Time Distribution', International Journal of Management Sciences and Information Sciences (Taiwan).Accepted for Publication, March 2008. To apper in 2009
- 74 Maraghi, Farzana, Madan, Kailash C. and Darby-Dowman, Kenneth (2007)** : 'Bernoulli Schedule Vacation Queues with Bath Arrivals and Random System Breakdowns Having General Repair Time Distribution', International Journal of Operations Research (USA). Accepted for Publication, June 2007.
- 73 Choudhury G. and Madan, Kailash C. (2007)** : 'A batch Arrival Bernoulli Vacation Queue with a Random Set Up Time Under Restricted Admissibility Policy', International Journal of Operations Research (USA). Volume 2, Number 1, pp 81-97.
- 72 Choudhury G. and Madan, Kailash C. (2006)** : 'A Batch arrival Queue Queue with Bernoulli Vacation Schedule Under Multiple Vacation Policy', International Journal of Management Sciences (Korea). Volume 12, Number 2, pp 1-18 .
- 71 Madan, Kailash C. and Choudhury G. (2006)** : 'Steady State Analysis of an  $M(x)/(G1,G2)/1$  Queue with Restricted Admissibility and Random Setup Time', International Journal of Management Sciences and Information Sciences (Taiwan). Volume 17, Number 2, pp 33-56.
- 70 Choudhury, G. and Madan, Kailash C. (2005)**: 'A Two-Stage Batch Arrival Queueing System with a Modified Bernoulli Schedule vacation

- under N-Policy', Mathematical and Computer Modelling [USA]. , Volume 42, pp 71-85.
- 69. Choudhury, G. and Madan, Kailash C. (2005):** 'A Two-Stage Batch Arrival Queueing System with a Random Setup Time under Modified Bernoulli Schedule Vacation Policy' Investigacion Operacional [Cuba]. Accepted for Publication in January, 2005.
- 68. Madan, Kailash C. and Choudhury G. (2005) :** 'A Single Server Queue with Two Phases of Heterogeneous Service Under Bernoulli Schedule and General Vacation Time', International Journal of Management Sciences and Information Sciences (Taiwan), Vol 16, Number 2, pp 1-16.
- 67. Madan, Kailash C. and Adel Z. Abu Al-Rub (2005):** 'On a Single Server Queue with Phase Type Service and Optional Phase Type Server Vacations Based on Exhaustive Service Under a Single Vacation Policy', Journal of Applied Statistical Science (JASS) (USA) Accepted for publication in September, 2004. To appear in 2005.
- 66. Kailash C. Madan, Ziad Al-Rawi and Amjad D. Al-Nasser (2005) :** 'On  $M(X)/(G1/G2)/1/G(BS)/Vs$  Queue with Batch Arrivals, Two Types of General Heterogeneous Service and General Vacation Times with Bernoulli Schedules Under a Single Vacation Policy', Applied Mathematics and Decision Sciences [New Zealand], Accepted for Publication in November, 2003. To appear in 2005., Vol., NO., pp .
- 65. Kailash C. Madan and Mohammad Rawaash (2005) :** 'On the  $M(X)/G/1$  Queue with Feedback and Optional Server Vacations Under a Single Vacation Policy', Applied Mathematics and Computation [Netherlands], Vol 160, No. 3, pp. 909-919..
- 64. Walid Abu-Dayyeh and Kailash C. Madan (2005) :** 'The Admissibility of the LRT for the Exponential Family Model', Applied Math and Computation [Netherlands], Vol. 160, No. 2, pp. 303-308.
- 63. Kailash C. Madan and Masuad M. Jahromi (2004) :** 'An  $M/G/1$  Queue with Bernoulli Schedules and Coxian-2 Server Vacations', Systems Science [Poland], Vol. 29, No. 4, 2004, pp 69-83.
- 62. Kailash C. Madan and Gautam Choudhury (2004) :** 'Steady State Analysis of an  $M/(G1,G2)/1$  Queue with Restricted Admissibility of Arriving batches and Modified Bernoulli Server Vacations Under a Single vacation Policy', Journal of Probability and Statistical Science [Taiwan], Vol. 2(2), 2004, pp 167-185.

- 61. Madan, Kailash C. and Adel Z. Abu Al-Rub (2004):** ' On a Single Server Queue with Optional Phase Type Server vacations Based on Exhaustive Deterministic Service and a Single Vacation Policy', Applied Mathematics and Computation [Netherlands], Vol. 149, Issue 3, 2004, pp. 723-734.
- 60. Gautam Choudhury and Kailash C. Madan (2004) :** 'A Two Phase Batch Arrival Queueing System With a Vacation Time Under Bernoulli Vacation Schedule', Applied Math and Computation [Netherland], Vol. 149, 2004, pp 337-349.
- 59. Kailash C. Madan and Gautam Choudhury (2004) :** 'An  $M(X)/G/1$  Queue with a Bernoulli Vacation Schedule Under Restricted Admissibility Policy', Sankhya [India], Vol. 66, Part 1, February, 2004, pp 175-193.
- 58. Madan, Kailash C., Adel Z. Abu Al\_Rub (2004):** 'Transient and Steady State Analysis of a Single Server Queue with Modified Bernoulli Schedule Server Vacations Based on Exhaustive Service and a Single Vacation Policy' Investigacion Operacional [Cuba]. Accepted for Publication in May, 2003.
- 57. Madan, Kailash C., Amjad D. Al-Nasser and Abedel –Qader Al-Masri (2004):** ' $M(X)/(G1/G2)/1$  Queue with Optional Re-Service, Applied Mathematics and Computation [Netherlands]. Vol. 152, pp. 71-88.
- 56. Madan, Kailash C. ,Walid Abu-Dayyeh and Mohamad Ghraibeh (2003):** ' On Two Parallel Servers with Random Breakdowns ', Soochow Journal of Mathematics [Taiwan], Vol. 29, No. 4, pp. 413-423.
- 55. Madan, Kailash C. , Walid Abu-Dayyeh and Firas Tayan (2003):** ' Steady State Analysis of an  $M/D/2$  Queue with Bernoulli Schedule Server Vacations ', Journal of Modern Applied Statistical Methods [USA]. May, 2003, Vol. 2, No. 1, pp 202-209.
- 54. Madan, Kailash C. and Walid Abu-Dayyeh (2003):** ' On a Non-Preemptive Priority Queueing System with a Single Server Simultaneously Dealing with Two heterogeneous Queues  $M/G1/1$  queue and  $M/G2/1$  queue ', Journal of Probability and Statistical Science [Taiwan]. Vol. 1 No. 2, pp 221-241.
- 53. Madan, Kailash C. , Walid Abu-Dayyeh and Mohammad Gharaibeh (2003):** 'Steady State Analysis of Two  $M(X)/M(a,b)/1$  Queue Models with Random breakdowns ', International Journal of

- Information and Management Sciences [Taiwan]. Vol. 14, Number 3, pp 37-51, 2003.
- 52. Madan, Kailash C. and Walid Abu-Dayyeh (2003):** ' On a Combination of M/G/1 and M/D/1 Queues in a Non-Preemptive Priority Queueing System', Far East Journal of Theoretical Statistics [India], Vol. 10, No. 2, pp 133-146.
- 51. Jihad Al-Jararha and Madan, Kailash C. (2003) :** 'An M/G/1 Queue with Second Optional Service with General Service Time Distribution', International Journal of Information and Management Sciences [Taiwan], Vol. 14, Number 2, pp 47-56.
- 50. Raid F. Anabosi and Madan, K. C. (2003) :** 'A Single Server Queue with Two Types of Service, Bernoulli Schedule Server Vacations and a Single Vacation Policy', Pakistan Journal of Statistics [Pakistan], Vol. 19, No. 3, pp 331-342.
- 49. Madan, Kailash C. (2003) :** 'An M/G/1 Type Queue with Time-Homogeneous Breakdowns and Deterministic Repair Times', Soochow Journal of Mathematics [Taiwan], Vol. 29, No. 1, pp 103-110.
- 48. Walid Abu-Dayyeh, Jihad Jarraha and Kailash C. Madan (2003) :** 'LRT Conjecture for Bivariate Normal', Applied Math and Computation [Netherland], Vol.145, No.1, pp 73-84.
- 47. Madan, Kailash C., Walid Abu-Dayyeh and Firas Tayyan (2003) :** 'A Two-Server Queue with Bernoulli Schedules and a Single Vacation Policy', Applied Math and Computation [Netherland], Vol. 145, No. 1, pp 59-71.
- 46. Madan, Kailash C. and Walid Abu-Dayyeh (2003) :** 'Steady State Analysis of a Single Server Bulk Queue with General Vacation times and Restricted Admissibility of Arriving batches ', 'Revista Investigacion Operacional' [Cuba] , Vol. 24 No. 2, pp 113-123.
- 45. Walid Abu-Dayyeh and Madan, Kailash C. (2002):** ' Sufficient Conditions for Admissibility in Case of Two Sided Alternatives for the Exponential Family Models" ', Journal of Statistical Theory and Applications [USA], Vol. 1, No. 4, 2002, pp 263-269.
- 44. Madan, Kailash C., Walid Abu-Dayyeh and M F. Saleh (2002):** ' An M/G/1 Queue with Second Optional Service and Bernoulli Schedule Server Vacations', Systems Science [Poland], Vol. 28, No. 3, pp. 51-62, 2002.

- 43. Madan Kailash C. (2002):** Two Types of Sequential-cum-Parallel General Optional Service in a Single Server Queue', Egyptian Statistical Journal (Egypt). Vol. 46, No. 1, pp 92-105.
- 42. Madan, Kailash C (2002) :** 'Balking Phenomenon in the  $M^{[x]}/G/1$  Vacation Queue', Journal of the Korean Statistical Society [Korea]. Vol. 31, Number 4, pp 1-17.
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- 40. Madan, Kailash C. and Baklizi, A. (2002) :** 'An M/G/1 Queue with Additional Second Stage Service and Optional Re-Service', International Journal of Information and Management Sciences [Taiwan], Vol. 13, No. 4, pp. 13-31.
- 39. Kailash C. Madan and Ayman Baklizi (2002) :** 'An M/(G1,G2)/1 Queue with Optional Re-Service', Stochastic Modelling and Applications [India], Vol. 5, No. 1, pp 27-39.
- 38. Madan, Kailash C. and Hani, M. Samawi (2002) :** 'Steady State Analysis of an M/D/1 Queue with Two Stages of Heterogeneous Server Vacations ( M/D/G1,G2/1', 'Revista Investigacion Operacional' , [Cuba] , Vol. 23, No. 2, pp 150-163.
- 37. Madan, Kailash C. and Walid Abu-Dayyeh (2002) :** 'Restricted Admissibility of Batches into an M/G/1 Type Bulk Queue with Modified Bernoulli Schedule Server Vacations ' , 'ESAIM P &S' , [France], Vol. 6, pp 113-125.
- 36. Madan, Kailash C. (2002) :** 'An  $M/G^{[M]}/1$  Queue with Long and Short Server Vacations', 'Acta Ciencia Indica' [India], Vol. XXVIII M, No. 1, pp 17- 26.
- 35. Madan, Kailash C. (2001):** 'On an M/G/1 Queue with General Bernoulli Schedule Server Vacations', Journal of Statistical Studies [Bangladesh] , Vol.21, December 2001, pp 33-40.
- 34. Madan, Kailash C. and Mohammad F. Saleh (2001) :** 'On an M/D/1 Queue with Deterministic Server Vacations', Systems Science Journal [Poland], Vol. 27, No. 2, pp. 107-118.

- 33. Madan, Kailash C. and Saleh M.F. (2001) :** 'On Single Server Vacation Queues with Deterministic Service or Deterministic Vacations', Calcutta Statistical Association Bulletin, [India], Vol. 51, Nos. 203-204, pp 225-241.
- 32. Madan, Kailash C. and Saleh M.F. (2001) :** 'On M/D/1 Queue with General Server Vacations' International Journal of Management and Information Sciences, [Republic of China], Vol. 12, No. 2, pp 25-37.
- 31. Madan, Kailash C. (2001) :** 'On a Single Server Queue with Two-Stage Heterogeneous Service and Deterministic Server Vacations', International Journal of System's Science [U.K.], Vol. 32, Number 7, pp 837-844.
- 30. Madan, Kailash C. (2000) :** 'On a Single Server Queue with Two-Stage Heterogeneous Service and Binomial Schedule Server Vacations', Egyptian Statistical Journal [Egypt], Vol. 40, No. 1, pp 39-55.
- 29. Madan, Kailash C. (2000) :** 'An M/G/1 Queue with Second Optional Service', Queueing Systems [USA], 34, 37-46.
- 28. Madan, Kailash C. (2000) :** 'An M/M/1 Queueing System with Interrupted Arrival Stream', Revista Investigacion Operacional [Cuba], Vol. 21, No. 1, pp 32-37.
- 27. Madan, Kailash C. (1999) :** 'An M/G/1 Queue with Optional Deterministic Server Vacations', Metron, [Italy], vol. LVII, no. 3-4, 83-95.
- 26. Madan, K.C. (1998) :** 'Steady State Behaviour of an  $M^{(x)}/M^{(b)}/1$  Queue with Correlated Arrivals', Acta Ciencia Indica, [India], Vol. XXIV M, No. 4, 311-316.
- 25. Madan, K.C. (1998) :** 'A Single Queue with Mutually Repacing m Servers', Revista Columbiana de Estadistica, [Columbia, South America], Vol. 22, No. 1, pp 1-8.
- 24. Madan, K.C. (1997) :** 'Correlated Selection for Service in a Single Server Queue with Two Classes of Customers', Internat. J. Management and Information Sciences, [Republic of China], Vol. 8, No. 4, pp 1-10.

- 23. Madan, K.C. (1996)** : 'On a Vacation Queue with Instantaneous Customer Loss', Microelectronics and Reliability, [England], Vol. 36, No. 2, pp 179-188.
- 22. Madan, K.C. (1996)** : 'A single Server Queue with Two Types of Units and Randomly Changing Priorities', Acta Ciencia Indica, [India], Vol. XXI, part III, pp 299-305.
- 21. Madan, K.C. (1995)** : 'A Bulk Input Queue with a Stand-by', South Africa Statistical Journal, [South Africa], Vol. 29, No. 1, pp 1-7.
- 20. Madan, K.C. (1995)** : 'On a Vacation Queue with Two parallel Servers Each Equipped with a Stand-By', Revista Colombiana de Estadística, [Columbia, South America], Nos. 29/30, pp 21-30.
- 19. Madan, K.C. and Arora, M.S. (1994)** : 'On a  $M^{[x]}/M^{[b]}/I$  Queueing System with Correlated Server Vacations', International Journal of Management and Information Sciences [Formerly, Tamkang Journal of Management Sciences], [Republic of China], Vol. 5, No.3, pp23-33.
- 18. Madan, K.C. (1994)** : 'On a Queueing System with Random Failures and Delayed Repairs', Journal of The Indian Statistical Association, [India], Vol. 32, pp 39-48.
- 17. Madan, K.C. (1994)** : 'An M/G/I Queueing System with Additional Optional Service and No Waiting Capacity', Microelectronics and Reliability, [England], Vol. 34, No. 3, pp 521-527.
- 16. Madan, K.C. (1994)** : 'A Queueing System with Three Service Channels in Tandem and Two-Sided Arrivals', Soochow Journal of Mathematics, [Republic of China], Vol. 20, No. 1, pp 11-19.
- 15. Madan, K.C. (1993)** : 'Balking and Reneging in a Vacation Queueing Model', Revista Colombiana de Estadística, [Columbia, South America], Vol. 28, pp 1-11.
- 14. Madan, K.C. (1992)** : 'An M/G/I Queueing System with Compulsory Server Vacations', Trabajos de Investigacion Operativa, [Spain], Vol. 7, No. 1, pp 100-110.
- 13. Madan, K.C. (1992)** : 'An a M/M/I Queueing System with Additional Optional Service in Batches', IAPQR Transactions, Journal of the Indian Association of Productivity, Quality and Reliability, [India], Vol. 17, No. 1, pp 23-33.

12. **Madan, K.C. (1992)** : 'A Bulk Queueing System with Random Failures and two Phase Repairs', Microelectronics and Reliability, [England], Vol. 32, No.5, pp 669-677.
11. **Madan, K.C. (1991)** : 'On a  $M^{[x]}/M^{[b]}/I$  Queueing System with General Vacation Times', International Journal of Management and Information Sciences, [Republic of China], Vol. 2, No. 1, pp 51-60.
10. **Madan, K.C. (1991)** : 'A Queueing System with Two types of Failures and Priority for Vital repairs ', Journal of M.A.C.T., [India], Vol. 25,, pp 25-43.
9. **Madan, K.C. (1991)** : 'A Single Server Bulk Input Queue with Two Kinds of Service', Acta Ciencia Indica, [India], Vol. XVII, M, 1, pp 25-32.
8. **Madan, K.C. (1990)** : 'A Two Server Queue with Correlated Availability of Services', J. Indian Soc. Stat. Oper. Res., [India], Vol. XI, No. 1-4, pp 11-19.
7. **Madan, K.C. (1989)** : 'Time-Dependent Behaviour of a Single Channel Queu with Fluctuating Efficiency', Tamkang Journal of Managment Sciences, [Republic of China], Vol. 10, No.2, pp 71-80.
6. **Madan, K.C. (1989)** : 'A Single Channel Queue with Bulk Service Subject to Interruptions', Microelectronics and Reliability, [England], Vol. 29, No.5, pp 813-818.
5. **Madan, K.C. (1988)** : 'A Cyclic Queueing System with Three Servers and Optional Two-Way Feedback', Microelectronics and Reliability, [England], Vol. 28, No.6, pp 873-875.
4. **Madan, K.C. (1976)** : 'Interrupted Service Queueing with Arrivals and Departures in Batches of Variable Size and General Repair Time Distribution', Zeitschrift Mathematische Operationsforeschung und Statistiek Berlin, [Presently named as 'Statistics'] [Germany], 7, Heft 1, S. pp. 139-149.
3. **Madan, K.C. (1975)** : 'On a Certain Type of Network of Queues', Journal of Applied Probability, [England], Vol. 12, pp 195-200.
2. **Madan, K.C. (1973)** : 'A Priority Queueing System with Service Interruptions', Statistica Neerlandica, [Netherlands], Vol. 27, No.3, pp 115-123.

1. **Madan, K.C. (1972)** : 'A Queueing System with Service Interruptions', Revue Roumaine de Mathematiques Pure et Appliques, [Romania], Tome XVII , No.5, pp 741-755.

### **b) Books, chapters Published**

- 1 **Chopra, S. D. and Madan, K. C.**, 'Mathematics for Middle Schools', Book II, Part II, National Council of Educational Research and Training, India, pp. 215-394, 1978. (Editors: Arora, Manmohan, S. and Mahendra Shanker)
- 2 **Chopra, S. D. and Madan, K. C.**, 'Mathematics for Middle Schools', Book III, Part II, National Council of Educational Research and Training, India, pp. 161- 326, 1979. (Editors: Gupta, R. P. and Mahendra Shanker)
- 3 **Das, S. C., Dhall, G. D., and Madan, K. C.**, et al 'A Textbook of Mathematics for Classes XI-XII', Book V, National Council of Educational Research and Training, India, pp. 1-156, 1980. (Editor: Das, S. C.)

Contributed one chapter or provided assistance in editing the following books:

- 4 'A Textbook for Middle Schools', Book 1, Part 1, National Council of Educational Research and Training, India, 1978.
- 5 'A Textbook for Secondary Schools' Part II, National Council of Educational Research and Training, India, 1978.
- 6 'A Textbook of Mathematics for Classes XI-XII', Book 1, National Council of Educational Research and Training, India, 1979.
- 7 'A Textbook of Mathematics for Classes XI-XIII', Book 1, National Council of Educational Research and Training, India, 1979.

**8** 'A Textbook of Mathematics for Classes XI-XII', Book IV, National Council of Educational Research and Training, India, 1979.

**8 INTERNATIONAL CONFERENCES ATTENDED/ Papers Published in Conference Proceedings**

- 1 Sixth International Conference on Operations Research Organised by World Congress on Science, Engineering and Technology (WCSET) held in Penang, Malaysia from February 25- 27, 2009: 'On a Batch Arrival  $M^x / M^{a,b}(RB) / 1 / G(D)G(R)$  Queue with Exponential Service in Batches of Variable Size  $[a,b]$ , Time-Homogeneous Random Breakdowns, General (Arbitrary) Delay Time and General (Arbitrary) Repair Time', Vol. 38, pp 1399-1411, February 2009
- 2 Participated and Served as a Member of the Supreme Organizing Committee for the International Conference on 'Higher Education in the Twenty-First Century-Issues and Challenges' Organised by Ahlia University, Bahrain at the Kingdom of Bahrain on June 3-4, 2007
- 3 Member of the Scientific Program Committee and the Reception/Registration Committee for the International Conference on Pure and Applied Mathematics (ICPAM 1995) held at the University of Bahrain, Bahrain from November 19-23, 1995. Also presented the following paper: 'A Single Server Queue with Statistically Dependent Long and Short Server Vacations'.
- 4 Participated in 23rd conference on Stochastic Processes and Their Applications held the National University of Singapore, Singapore from June 19-23, 1995 and presented the following paper: 'An m-server Queue with correlated availability of Servers'.
- 5 Participated in EURO XIII / OR 36 Conference held at the University of Strathclyde, Scotland, from July 19-22, 1994 and presented the following paper: 'Reneging in a Bulk Input Vacation Queue'. (Invited Speaker)
- 6 Participated in 22nd Conference on Stochastic Processes and their Applications, held at Vrije Universiteit, Amsterdam, The Netherlands from June, 21-21, 1993 and presented the following paper: 'An M/G/I Queueing System with Compulsory Server Vacations'.

**Affiliation:**

- |           |   |             |
|-----------|---|-------------|
| <b>1.</b> | Delhi Association of Mathematics Teachers | Life Member |
| <b>2.</b> | American Mathematical Society             | Member      |
| <b>3.</b> | American Statistical Society              | Member      |
| <b>4.</b> | Indian Statistical Association            | Member      |
| <b>5.</b> | American Mathematical Society             | Reviewer    |
| <b>6.</b> | Abhath Al-Yarmouk Journal                 | Referee     |
| <b>7</b>  | Annals of Operations Research             | Referee     |
| <b>8</b>  | Investigacion Opeartioional               | Referee     |
| <b>9</b>  | Stochastic Modelling and Applications     | Referee     |
| <b>10</b> | Applied Mathematical Modelling            | Referee     |
| <b>11</b> | European Journal of Operational Research  | Referee     |
| <b>12</b> | Journal of Prob. & Statistical Science    | Referee     |
| <b>13</b> | J. of Appl Math and Decision Sciences     | Referee     |

**Ph.D. Thesis Supervision**

Successfully completed Ph. D. supervision of Ms. Farzana Maraghi in August 2008 under the Brunel-Ahlia Joint Ph.D. Programme (WR)

**Master Dissertations Supervision**

Successfully completed supervision of 12 master dissertations (11 at Yarmouk University and one the University of Bahrain)