EDUCATION, RESEARCH, AND PUBLICATIONS:

(A) EDUCATION:

(i) Ph.D. in Mathematics, University of Patna
Field of Research: Numerical Analysis
Ph.D. Dissertation: Numerical Solutions of Some Differential Equations.

(ii) Master of Science Degree in Statistics, Florida International University
Master's Thesis: Entropy Study of Record Value Distributions Obtained From Some Commonly Used Continuous Probability Models

(iii) Master of Science in Mathematics, (Studied both Pure & Applied Mathematics, with Specialization in Numerical Analysis), University of Patna

ADDITIONAL EDUCATIONAL QUALIFICATIONS:

(i) Post-Graduate Diploma in Computer Programming and Applications (Fortran, Pascal, Basic, D'Base, Word Processing, etc), Patna, India
Post-Graduate Diploma's Project: "A Case Study of Library Information System."

(ii) Bachelor of Education (Teaching of Mathematics & Physical Sciences), University of Patna

(iii) Bachelor of Science (Honors in Mathematics), (Studied both Pure & Applied Mathematics., with Specialization in Numerical Analysis), Patna

(iii) Certificate Course in C++, Piper Community School, USA

(B) PAPERS PUBLISHED/SUBMITTED FOR PUBLICATION:

(i) "Some Fixed Point theorems Satisfying a Rational Inequality," "The Journal of Bihar Mathematical Society," Vol. 14 (1991), pp. 26-34.

(ii) "Fixed Point Theorems for Some Discontinuous Operators in Banach Spaces," "Bulletin of Malaysian Mathematical Society" (Second Series), 14 (1991), 63-68.

(iii) "Fixed Point and Coincidence Point Theorems in Banach Spaces," "The Mathematics Education," Vol. XXVI, 4, Dec. 1992, 247-249.

(iv) "Fixed point theorems for some discontinuous operators in 2-metric spaces," "Commun. Fac. Sci. Univ. Ankara," Ser. A1, 41, No.1-2, 189-195 (1992). ISSN 0251- 0871.

(v) "Some Fixed Point Theorems in Banach Spaces," To appear in the Journal "Nonlinear Functional Analysis and Applications," Korea.

(vi) "Generalization of Double Integration Rule for the Numerical Cubature of Integrals of the form

$$\int_c^d \int_a^b f(x, y)\, K(r, s; x, y)\, dx\, dy$$,"

"The Mathematics Education," Vol. XXVII, 4, Dec. 1993.

(vii) "Some Fixed Point Theorems for Densifying Mappings," "Acta Cienc. Indica," Math. 20, No.1, 5-8 (1994), ISSN 0970-0455.

(viii) "Fermat's Last Theorem – A Chronological Historical Introduction," "Reflection Points," Volume 3, Issue 3, May 1999, (A Publication of Broward Community College, South Campus, Mathematics Department, Florida, U.S.A.)

(ix) "SOME MNEMONICS FOR RECALLING π CORRECT TO THIRTY DECIMAL PLACES," "Reflection Points," Volume 4, Issue 3, February 2000, (A Publication of Broward Community College, South Campus, Mathematics Department, Florida, U.S.A.)

(x) "Disjoint Crossover Events and Computational Complexity of Linear Programming," PNG Journal of Mathematics, Computing and Education, Vol.6 (2002), pp 35 – 48, (jointly with J. N. Singh).

(xi) "A Comparative Study of Some Numerical Methods for the Solutions of Fourth Order Boundary Value Problems in Ordinary Differential Equations," "Acta Cienc. Indica," Vol. XXXI M, No. 1, 173 - 186, (2005), ISSN 0970-0455, (jointly with J. N. Singh).

(xii) "ENTROPIES OF RECORD VALUES OBTAINED FROM THE NORMAL DISTRIBUTION, AND SOME OF THEIR PROPERTIES," Journal of Statistical Theory and Applications, Vol. 4, No. 4, (2005), U.S.A., ISSN 1538-7887.

(xiii) "ENTROPY AND INFORMATION PROPERTIES OF RECORD VALUES FROM A WEIBULL DISTRIBUTION," Journal of Statistical Theory and Applications, Vol. 5, No. 2, (2006), U.S.A., ISSN 1538-7887.

(xiv) "PROPERTIES OF ENTROPIES OF RECORD VALUES IN RELIABILITY AND LIFE TESTING CONTEXT," To appear in "Communications in Statistics – Theory & Methods," Vol. 35, Issue 6, (2006), Canada, (jointly with Hassan Zahedi).

(xv) "SOME CRITERION FOR LEAST SQUARE REGRESSION PLANE," To appear in "VARAHMIHIR JOURNAL OF MATHEMATICAL SCIENCES," Vol. 5 (2), (2005), India, (jointly with B. M. Golam Kibria and J. N. Singh).

(xvi) "ON SOME INEQUALITIES FOR GAMMA AND PSI FUNCTIONS OF NATURAL NUMBERS, WITH HISTORICAL REMARKS AND APPLICATIONS," To appear in "VARAHMIHIR JOURNAL OF MATHEMATICAL SCIENCES," India, A Special issue in honor of Professor S. P. Singh (Canada), (jointly with J. N. Singh).

(xvii) "The Importance of Mathematics," POLYGON, Volume 1, Issue 1, January, 2006, An electronic publication of the Liberal Arts and Sciences Department, Miami-Dade College, Hialeah Campus, Florida, USA.

(xviii) "Computing Some Approximate Values of π (PI)," POLYGON, Volume 1, Issue 1, January, 2006, An electronic publication of the Liberal Arts and Sciences Department, Miami-Dade College, Hialeah Campus, Florida, USA.

(xix) "DISTRIBUTION OF THE RATIO OF MAXWELL AND RICE RANDOM VARIABLES," To appear in Int. J. Contemp. Math. Sci., Vol. 1, 2006, no. 13, 623 – 637, Bulgaria, (jointly with B. M. Golam Kibria, and J. N. Singh).

(xx) "A DEFINITE INTEGRAL OCCURING IN ENTROPY, INFORMATION, PROBABILITY AND RELIABILITY THEORIES - SOME HISTORICAL REMARKS, PROOF, AND APPLICATIONS," To appear in ACTA CIENCIA INDICA (Mathematics Section), India.

(xxi) "ON THE PROBABILITY DISTRIBUTION OF THE RATIO OF MAXWELL AND RAYLEIGH RANDOM VARIABLES," (Communicated for Publication).

(xxii) "SOME K-L INFORMATION PROPERTIES FOR THE RECORD VALUE DISTRIBUTIONS ASSOCIATED WITH WEIBULL AND NORMAL DISTRIBUTIONS," (Communicated for Publication).

(xxiii) "Distributions of the product and ratio of Maxwell and Rayleigh random variables," (Communicated for Publication).

(xxiv) "Exact Distribution of the Ratio of Gamma and Rayleigh Random Variables," (Communicated for Publication).

(xxv) "On The Product Of Maxwell And Rice Random Variables," (Communicated for Publication).

PAPERS READ/PRESENTED AT SEMINARS/CONFERENCES ETC.:

1. "Generalization of Double Integration Rule," presented at the 79th Indian Science Congress, Baroda, India, 1992.

2. "A Note on Some Fixed Point Theorems," accepted for presentation at 58th Indian Mathematical Society Conference, March 22-24, 1993, B.H.U., Varanasi, India.

3. "Some Results on Fixed Point Theorems in Banach Spaces," accepted for presentation at 80th Indian Science Congress, Goa, India, 1993.

4. "Linear and Non-Linear Population Growth Models Using First Order Ordinary Differential Equations," Accepted for presentation at the Third Biennial Symposium on Mathematical Modeling in the Undergraduate Curriculum, June 12-13, 1998, sponsored by University of Wisconsin-LaCrosse and the Consortium for Mathematics and its Applications, U.S.A.

5. "A Survey of Some Differential Equations, Difference Equations, and Integral Equations Models of Population Dynamics," accepted for presentation at the Fifteenth Conference of Applied Mathematics (CAM 99), February 12 – 13, 1999, University of Central Oklahoma, Edmond, Oklahoma 73034, U.S.A.

6. "SOME REMARKS ON THE CONVERGENCE OF PRIMAL-DUAL INTERIOR POINT ALGORITHM FOR SEMIDEFINITE PROGRAMMING," Accepted for presentation at the Third Seminar on Numerical Analysis and its application, 15-17 November 2000, Zahedan, Iran, (jointly with J. N. Singh).

7. "Fitting of some multiple regression models to predict the student's final examination scores in a trigonometry class at Florida International University", presented at the Mathematical Association of America – Gold Coast Section Meeting and Workshop, October 05, 2001, Miami- Dade Community College (Wolfson Campus), Miami, Florida, U.S.A., (jointly with J. N. Singh).

8. "Numerical solutions of some initial-value problems in ordinary differential equations, and related integral equations," presented at the Mathematical Association of America – Gold Coast Section Meeting and Workshop, October 05, 2001, Miami-Dade Community College (Wolfson Campus) Miami, Florida, U.S.A., (jointly with J. N. Singh).

9. "Karmarkar's algorithm, Convergence, Termination and Disjoint Crossover Events in Linear Programming," presented at the Mathematical Association of America – Gold Coast Section Meeting and Workshop, October 05, 2001, Miami-Dade Community College (Wolfson Campus), Miami, Florida, U.S.A., (jointly with J. N. Singh).

10. "A STUDY OF EFFECTS OF THE EIGENSTRUCTURE OF REGRESSOR MATRIX ON ITS CONDITION NUMBER, COLLINEARITY INDICES, AND INFORMATION INDICES," presented at the International Conference on Matrix Analysis and Applications, December 14 – 16, 2003, Nova Southeastern University, Fort Lauderdale, USA.

11. "SOME REMARKS ON THE SOLUTION OF LINEAR FEASIBILITY PROBLEMS," presented at the International Conference on Matrix Analysis and Applications, December 14 – 16, 2003, Nova Southeastern University, Fort Lauderdale, USA, (jointly with J. N. Singh).

12. "A Chronology of African-Americans in Mathematical Sciences," presented on the occasion of African American History Month Vignette, 23rd February, 2005, Miami-Dade College, Hialeah Campus, Florida, USA.

13. "CLASSROOM ASSESSMENT TECHNIQUES – AN IMPLEMENTATION IN A BUSINESS CALCULUS COURSE," Accepted for Presentation at the Third International Conference on The Teaching of Mathematics, June 30 – July 05, 2006, Istanbul, Turkey.

14. "A Variant of Primal-Dual Interior-Point Method for Linear Programming based on Kernel Functions," Submitted for Presentation at the American Mathematical Society Cincinnati Meeting/Conference, University of Cincinnati, October 21 – 22, 2006, Cincinnati, Ohio, USA, (jointly with J. N. Singh).

15. Contributed to the MDC Earth Literacy Resource Center "Greening the Curriculum - Faculty Lessons Plans with a Green Perspective" on the following topic: "***Sustainability Exploration in Mathematics,"*** http://www.mdc.edu/environethics/Lessonplans.asp .

16. Presented a talk on "Sustainability Exploration in Mathematics," at MDC College-wide Mathematics Retreat (Kendall Campus), during the spring semester of 2006.

THESIS/PROJECT REPORTS COMPLETED:

1. SHAKIL, M., "Numerical Solutions of Some Differential Equations," Ph.D. Dissertation.
2. SHAKIL, M., et. al., "A Case Study of Library Information System,"A Post-Graduate Diploma in Computer Programming and Applications Project Report.
3. SHAKIL, M., "Entropy Study of Record Value Distributions Obtained From Some Commonly Used Continuous Probability Models," Master's Thesis.
4. SHAKIL, M., "Fitting of an appropriate multiple regression model to predict the amount charged by credit card users", A COMPUTER PROJECT.
5. SHAKIL, M., "Fitting of an appropriate multiple regression model to predict the student's final examination score in a trigonometry class of Florida International University", A COMPUTER PROJECT.
6. SHAKIL, M., "Fitting of a linear model to predict the college GPA of matriculating freshmen based on their college entrance verbal and mathematics test scores," A COMPUTER PROJECT.
7. SHAKIL, M., "A Multiple Linear Regression Model to Analyze the Transit Rideship Data: A study based on the data from a transit-on-board survey conducted in the Miami-Dade County Area, Florida, U. S. A.," A COMPUTER PROJECT.
8. SHAKIL, M. "A STUDY OF SOME STATISTICAL METHODS FOR TESTING HYPOTHESES AND CONSTRUCTING CONFIDENCE INTERVAL ESTIMATES OF THE DIFFERENCE BETWEEN SAMPLE MEANS – ANALYSIS OF PM_{10} DATA FROM PRINCE GEORGE, BRITISH COLUMBIA," A COMPUTER PROJECT.
9. Supervised undergraduate research projects in mathematics and mathematics education at Johnson & Wales University, North Miami, USA (1999 – 2000), and College of Education, Sokoto, Nigeria (1981 – 87).

PROFESSIONAL ACTIVITIES:

Reviewed the following text-books (during 2005 – 2006):

(i) **A proposed Pre-calculus text by the publisher, Houghton Mifflin Company.**
(ii) **"Advanced Statistics from an Elementary Point of View," by Michael J. Panik, Elsevier Inc.**
(iii) **"Probability and Statistics with Integrated Software Routines," by Ronald Deep, Elsevier Inc.**
(iv) **"For All Practical Purposes – Mathematics Literacy in Today's World," W. H. Freeman and Company**
(v) **Brown's Calculus Text-Books, Prentice-Hall, Inc.**
(iv) **Ad-hoc Reviewer, Journal of Modern Applied Statistical Methods, (Editor: Dr. Shlomo Sawilowsky, Wayne State University)**

PROFESSIONAL MEMBERSHIPS:

(i) Fellow, Royal Statistical Society, U. K.
(ii) Member, American Mathematical Society, U. S. A.
(iii) Member, American Statistical Association, U. S. A.
(iv) Member, International Linear Algebra Society, U. S. A.
(iv) Member, Maplesoft.com, U.S.A.
(v) Member, Research Group in Mathematical Inequalities and Applications, Australia
(vi) Alumni, Florida International University Alumni Association, U. S. A.
(vii) Life Member, Bihar Mathematical Society, India.
(viii) Registered Graduate & Alumni, Patna University, India

RESEARCH INTERESTS:

Statistics, Probability, Numerical Analysis, Functional Analysis, Linear Algebra, Matrix Theory, Linear Programming, Mathematical Modeling, Special Functions, History of Statistics and Mathematics, Curriculum Development, and Mathematics & Statistics Education.

APPENDIX 'A'

"Statement on Teaching and Research Interests"

The goal of education is to develop authentic individuals who exercise freedom of choice, take responsibility for their actions, solve social problems and create a better world. The philosophy of my teaching also lies in these facts. The goal of my teaching is to create successful independent and self-disciplined learners, who could set challenges and solve problems. These individuals should be able to develop inquisitive mind, apply critical thinking skills, and take action also. The goal of any research is to solve some real world social problems and create a better world. The goal and philosophy of my research also lies in these facts. I have a strong interest in and commitment to research in mathematics, statistics, mathematical sciences, and math & stat education. I have special interest in interdisciplinary and collaborative research. I have research interests in the field of Numerical Analysis, Functional Analysis, Topology, Linear Algebra, Matrix Theory, Mathematical Modeling, Special Functions, Statistics, History of Mathematics, Curriculum Development, and Mathematics Education. Further, my career objectives and goals are to have some responsible, professionally challenging positions in the field of mathematics, statistics, mathematical sciences, math & stat, or related field that will require full use of developed skills, expertise, knowledge and applications of mathematics, statistics, mathematical sciences, or math & stat education.

APPENDIX 'B'

List of Mathematics Courses Studied at the Graduate and Undergraduate Levels:

(A) "At Graduate Level (For M.S. and Ph.D. Degrees)":

(i) Axiomatic Set Theory, Mathematical Logic, and Foundations of Mathematics
(ii) Linear and Abstract Algebra
(iii) Real Analysis
(iv) Topology and Functional Analysis
(v) Complex Analysis
(vi) Ordinary and Partial Differential Equations
(vii) Methods of Mathematical Physics
(viii) Special Functions and Integral Transforms
(ix) Differential Geometry
(x) Fluid Mechanics, Elasticity, General Dynamics, and Electro-Magnetism
(xi) Numerical Analysis, Calculus of Finite Differences, and Statistics

(xii) Regression Analysis

(xiii) Statistical Quality Control

(xiv) Data Analysis I & II

(xv) Mathematical Statistics I & II

(xvi) Time-Series Analysis

(xvii) Design of Experiments

(xviii) Linear Models

(xix) Reliability.

(xx) Analysis of Teaching

(B) "At Undergraduate Levels (For B.S. and B.Ed. Degrees, with Mathematics-Major and Honors & Mathematics Education)":

(i) Linear and Abstract Algebra

(ii) Real and Complex Analysis

(iii) Set Theory and Mathematical Logic

(iv) Differential Calculus

(v) Integral Calculus

(vi) Analytical Geometry of Two Dimensions

(vii) Analytical Geometry of Three Dimensions

(viii) Vector Algebra

(viii) Vector Calculus

(ix) Pure (Projective) Geometry

(x) Statics, Dynamics, and Hydrostatic

(xi) Ordinary and Partial Differential Equations

(xii) Numerical Analysis, Calculus of Finite Differences, Probability, and Statistics

(xiii) Theory of Numbers

(xiv) Mathematics Education, Educational Measurement and Statistics, Educational Psychology, Educational Philosophy, etc.

APPENDIX 'C'

RESEARCH PLANS AND AGENDA

1. Matrix Stability Analysis of Numerical Solutions of Some Parabolic Partial Differential Equations
2. Stability Analysis of Some Multistep Methods for the Numerical Solution of Ordinary Differential Equations
3. A Study of Some Fixed Point Theorems
4. A Study of Painleve Theory of Differential Equations
5. Matrix Inequalities
6. A Study of Condition Numbers

7. Statistical Theory of Rounding Errors in the Numerical Solutions of Ordinary Differential Equations
8. Numerical Solutions of Two-Point Boundary Value Problems in Ordinary Differential Equations, using Spline Techniques
9. A Survey of Spline Techniques Applied to Some Partial Differential Equations
10. Some Fundamental Concepts in Matrix Theory and their Applications in the field of Social Sciences
11. Algebraic Methods for the Analysis of Social Structures
12. Taylor's Theorem – A Historical Introduction
13. Fourier Series – A Historical Introduction
14. Applicability of Some Statistical Distribution Functions in Air Pollution Studies – A Case Study
15. On the Applicability of Some Statistical Distribution Functions in Water Pollution Studies – A Case Study
16. A Study of Attitude of First Year Students in a Community College towards Mathematics – A Case Study
17. A Study of Level of Aspiration of First Year Mathematics Students in a Community College – A Case Study
18. A Study of Some Linear and Non-linear Programming Problems