

RESUME
THE COLLEGE OF SCIENCES AND MATHEMATICS

Spring 2007

1. NAME: Jack B. Brown Appointment
Academic X Annual
2. RANK: Professor Emeritus Dept of Mathematics & Statistics
Part-time 2006-7

3. EDUCATION:

1956-67: Earned B. A. (Phi Beta Kappa), M. A. and Ph. D. degrees in mathematics at U. of Texas, Austin. M. A. supervisor R. E. Lane, Ph. D. supervisor H. S. Wall. Undergraduate minor: physics. Graduate minor: actuarial science.

4. EXPERIENCE:

A. Major Positions

i. Academic Experience

1967-present: Teaching and research during academic years in Dept. of Math. at Auburn University, (promoted Assoc. Prof. '71, promoted Prof. '76, elected Head '83, returned to full-time teaching and research '85, awarded 5-yr. Alumni Professorship '89).

ii. Applied Experience.

- 7 summers - Sandia National Laboratory, Albuquerque, NM. {3 summers in Quality Assurance Dept. 2 summers in Statistics, Computing, & Human Factors Div., 2 summers in Fuel Cycle Risk Analysis Div.}.
- 5 summers + 1 year + consulting - National Security Agency, Ft. Meade, MD. {Research in cryptologic mathematics}.
- 7 summers - Center for Communications Research, Institute for Defense Analyses, Princeton, NJ. {Research in cryptologic mathematics}.
- 3 summers -Center for Analysis, Newport Beach, CA. {Reliability studies - infrared statistical discrimination techniques}.
- 1 summer - Bell Laboratories, Holmdel, NJ. {Non-parametric statistical analysis}.
- 1 summer - TRW Ballistic Missiles Division, San Bernardino, CA. {Infrared discrimination}.
- 1 summer - at Auburn working on USAF contract. {Infrared discrimination}.
- 1 summer - Center for Computing Sciences, Institute for Defense Analyses, Bowie, MD, {speech and data compression}.

B. Assigned Duties at Auburn:

<u>Allocation of Time:</u>	<u>Activity</u>	<u>Percent</u>
	Teaching	<u>60%</u>
	Research	<u>30%</u>
	Service	<u>10%</u>

During my 40 years on the faculty at Auburn University, my cumulative teaching load has been roughly:

40% senior-level and graduate-level mathematical analysis,
25% senior-level and graduate-level probability and math. stat.,
35% calculus, linear algebra, diff. equ., engineering math.

I taught senior/graduate probability and/or mathematical statistics during at least 30 of my 40 years at Auburn. I was working in industry almost every summer (see the list above) during the period and I managed to place many of the students from my probability and mathematical statistics classes (as well as some of my fellow faculty members) into summer appointments, as well as permanent appointments, at many of the research centers where I have worked. I placed many more into appointments at other locations where I have not worked. I would guess that I have written several hundred letters of recommendation for Auburn students during my tenure at Auburn

For many years I taught an "Actuarial Science Seminar" for students preparing to take the Society of Actuaries' exam on probability and statistics. I count among my former students actuaries working at firms all over the country, including Vice Presidents of the Liberty National, Protective Life, and Prudential Insurance Companies and a number of other former students who have achieved Fellowship status in the Society of Actuaries. Much of this teaching was done "for free" to small groups of students. But after 1999, Dr. Jerry Veeh and I (and the departmental Actuarial Committee) designed a new "Actuarial Science Concentration" within the Applied Mathematics degree plan. Since the establishment of our ACTU option, these teaching assignments have counted toward my assigned teaching duties. I have organized many "Visits" of actuaries from nearby insurance companies who come to the department and discuss the actuarial profession with our students and sometimes come on recruiting trips to hire our students. Indeed, during spring 2004 I organized 3 such "Visits" and managed to place 7 students involved in the program into Summer Internships at Protective Life and Vesta Insurance in Birmingham, AFLAC Insurance in Columbus, GA, and ALFA Insurance in Montgomery. In addition to these placements, two graduating seniors in the program obtained permanent jobs at Protective Life

I supervised one EPSCoR Scholarship student in 1995 and supervised two EPSCoR Scholarship students during 1998.

I have supervised 15 M. S. theses, 1 Master of Prob. and Stat., and 6 Ph. D. dissertations. The majority of my former Masters students and 3 of my former Ph. D. students hold research positions in government or industry (IBM, Northrop Grumman, Motorola Research, SPARTA, Texaco Research, and Center for Naval Analyses, among others). Two of my most recent Ph. D. students hold tenured academic positions. One of my former Ph. D. students was recently on a Fulbright Fellowship conducting research in Hungary and was promoted to Professor in 2004.

5. SIGNIFICANT HONORS AND AWARDS

Phi Eta Sigma ('56), Phi Beta Kappa ('60), and several other honor societies at the University of Texas. Also selected to be participant in US State Dept. Exchange Program to Chile (1959).

Teaching Awards:

1997 Named by AU Panhellenic Council as an Outstanding Professor.

2005 Received the COSAM Outstanding Teacher Award.

2005 Received an AU Alumni Association Undergraduate Teaching Excellence Award.

Attended many of the Spring COSAM Honors Convocations when students receiving awards asked me to present their awards to them. The 2007 COSAM Honors Convocation was dedicated to me (see

<http://www.auburn.edu/~brownj4/COSAM07>).

Numerous invited talks and papers (listed below). Received the annual "ANDY" award at 13th Summer Symposium on Real Analysis, held at Michigan State Univ., in July, 1989. Selected to participate in NSA Mathematical Sabbatical Program in '93 - '94 and again in '99. 1993-94 Section Lecturer of the Southeastern Section of the Mathematical Association of America. Contributing Editor of the Real Analysis Exchange, a research journal published at Michigan State Univ. Received "Special Performance Cash Award" (Jan., 1994) at National Security Agency for "substantial contribution to cryptanalysis of high priority SIGINT source".

6. CONTRIBUTIONS:

i. Publications related to teaching:

Mathematicians in Industry - Experiences of One High-tech Migrant Worker, Alabama J. Math. 25 (Fall 2001), 3/22.

ii. Course and curriculum development:

I have played a major role in development of probability and statistics offerings at Auburn. I designed a rigorous senior level probability course, MH 464, in 1968, and taught it in '69, '70, '72, and '73. After that, I became more involved in the 567-8 sequence. In 1973, I designed the graduate level probability theory course, 664-5-6, and taught it in '74-'75 and again in '76-'77. In 1979, I put in a third quarter senior-level probability-statistics course, 569, and taught it in '79, '80, '81, and '85. In 1999 I played the major role in designing the new course MATH 6790, Actuarial Seminar I, for students preparing to take the new Society of Actuaries' Course I Exam. I also played a big part in

designing our new Actuarial Option in the undergraduate Applied Mathematics degree program.

I was, of course, instrumental in developing the graduate level real analysis sequence, putting in the third quarter course in 1983. I designed the 3-quarter sequence, 687-8-9, Real Functions and Descriptive Set Theory and have taught that material three times.

iii. Graduate students supervised as major professor:

Masters Students:

R.E. Johnson	68-70, MS,	Working at Michelin Research (?)
D.P. Brannan	68-70, MS,	Teaching at Ala. Christian College (?)
L.G. (Thomas) Upshaw	69-71, MS,	Chancellor, U. So. Carolina, Beaufort
K. Morgan	71-73, MS,	Working at IBM
G. V. Cox	72-74, MS,	Working for Center for Naval Analyses
P. C. Scott	72-74, MS,	Teaching at high school in Tennessee
C. (Mays) Smith	76-77, MS,	Took position in industry, returned for Ph.D. under W. Hudson.
J.T. Walsh	80-82, MS,	Working at Northrop Grumman in California
J.T. Walsh	80-84, MPS,	Working at Northrop Grumman in California
P. Kornman	82-84, MS,	Worked at SPARTA before returning for Ph.D. under G. Kozlowski.
B. Boyette	83-85, MS,	Working at Texaco Research (?)
R. Ball	86-88, MS,	Teaching at 4 yr. college in Tennessee
R. McDaniel	86-88, MS,	Worked at Optimization Technology, Inc., Huntsville and Auburn, currently at Bentley Systems in Birmingham.
H. Talibi	88-90, MS,	Completed AU Ph.D. program under direction direction of Kallenburg.
E. Harshbarger,	93-94, MS,	Accepted to Ph. program at U. Cal. San Diego but took job at SUN Microsystems.

Ph.D. Students

G. V. Cox, 74-78, dissertation title, "Concentration properties in the product space S_n ", published in Fund. Math.; now at Center for Naval Analyses, Alexandria, VA.

K. W. Lane, 76-80, dissertation title, "On the Borel class of measure spaces", published in Proc. AMS; now a "Technical Fellow", working at Northrop Grumman in Huntsville, AL.

J. T. Walsh, 80-84, dissertation title, "Marczewski sets, measure, and sets with the Baire property", published in Fund. Math.; now a "Technical Fellow", working at Northrop Grumman in San Bernardino, CA.

P. H. Reardon, 87-91, dissertation title, "Classical measure spaces in the Ellentuck and density topologies", published in Fund. Math.; currently tenured (immediate past Chairman) in Math. Dept. at SE Okla. State Univ.

U. B. Darji, 89-91, dissertation title, "On completely Ramsey sets and limits of differentiable functions", 2 parts accepted by Colloq. Math. and Proc. AMS; tenured in Math. Dept. at Univ. of Louisville, recently on

Fulbright Fellowship conducting research in Hungary. Was promoted to Full Professor spring 2004.

E. P. Larsen 92-97, dissertation titled "Uncountable intersections of continuous, nowhere monotone functions with smooth functions". One (joint) paper from dissertation published by Proc. AMS. Accepted a tenure track position at Tuskegee University upon graduation.

B. Research

I have organized a series of 14 "Miniconferences in Real Analysis" during the past twenty years. The 4th through 14th such Miniconferences (which were NSF-funded by a joint grant with Geraldo DeSouza) attracted speakers from 28 states and several foreign countries.

DeSouza and I organized one of the 9 NSF-funded NSF-CBMS Regional Conferences in the Mathematical Sciences in 1989. The Auburn conference was on Harmonic Analysis and Real Function Spaces, and the featured speaker was Guido Weiss. There were over 50 participants.

I have around thirty some-odd mathematical research publications (see list below) plus a comparable number of classified and proprietary papers, technical memos and reports written in connection with my 1 yr + 25 summer appointments in applied mathematical analysis. I have been a reviewer for the REVIEWS of the AMS since 1975, having written a total of 71 reviews for this publication. I have served as referee on various occasions for the journals, Fund. Math., Proc. AMS, Ill. J. Math., Top. Proc., Houston J. Math., Real Analysis Exchange, the AMS Journal Contemporary Mathematics, the Amer. Math. Monthly, Topology and Applications, and various refereed Conference Proceedings, having refereed a total of 39 papers for these journals. I have recently served as a proposal reviewer for the National Science Foundation and also for the National Research Council.

i. Mathematical research papers appearing in refereed journals:

1. Density of one graph along another, Proc. AMS 20 (1969), 147-149.
2. Connectivity, semi-continuity, and the Darboux property, Duke Math. J. 36 (1969), 559-562.
3. Nowhere dense Darboux graphs, Colloq. Math. XX (1969), 243-247.
4. Negligible sets for real connectivity functions, Proc. AMS 24 (1970), 63-269.
5. Totally discontinuous connectivity functions, Colloq. Math. XXIII (1971), 53-60.
6. Metric spaces in which a strengthened form of Blumberg's theorem holds, Fund. Math. LXXI (1971), 243-253.
7. Stochastic metrics, Z. Wahr. u. v. G. 24 (1972), 49-62.

8. On the relationship between Menger spaces and Wald spaces, *Colloq. Math.* XXVII (1973), 323-330.
9. Lusin density and Ceder's differentiable restrictions of arbitrary real functions, *Fund. Math.* LXXXIV (1974), 35-45.
10. Almost continuous Darboux functions and Reed's pointwise convergence criteria, *Fund. Math.* LXXXVI (1974), 1-7.
11. Almost continuity of the Cesaro-Vietoris function, *Proc. AMS* 49 (1975), 185-188.
12. On the Baire order of concentrated spaces and L_1 spaces, *Fund. Math.* XCIV (1977), 165-172.
13. Baire category in spaces of probability measures, *Fund. Math.*, XCVI (1977), 189-193.
14. A measure theoretic variant of Blumberg's theorem, *Proc. AMS* 66 (1977), 266-268.
15. (With R. J. Gardner) Generalized Lusin sets and the Baire order problem, *Bull. Acad. Pol. des Sci.* XXVII (1979), 745,750.
16. (With G. V. Cox) Classical theory of totally imperfect sets, *Real Analysis Exchange* 7 (1982), 185-232 (invited expository paper).
17. (With G. V. Cox) Continuous images of Lusin sets, *Proc. AMS* 89 (1983), 52-54.
18. Variations on Blumberg's theorem, *Real Analysis Exchange* 9 (1983), 123-137.
19. (With G. V. Cox) Baire category in spaces of probability measures II, *Fund. Math.* CXXI (1984), 143-148.
20. (With J. C. Helton and R. L. Iman) Sensitivity analysis of the asymptotic behavior of a model for the environmental movement of radionuclides, *Ecological Modelling* 28 (1985), 243-278.
21. (With Z. Piotrowski) Co-Blumberg spaces, *Proc. AMS* 96 (1986), 683-688.
22. (With K. Prikry) Variations on Lusin's theorem, *Trans. AMS* 302 (1987), 77-86.
23. (With P. Humke and M. Laczko) Measurable Darboux functions, *Proc. AMS* 102 (1988), 603-610.
24. Marczewski null sets and intermediate Baire order, *AMS Contemporary Mathematics* 94 (1989), 43-50.
25. Differentiable restrictions of real functions, *Proc. AMS* 108 (1990), 391-398.
26. Ramsey sets and related sigma algebras and ideals, *Fund. Math.* 136 (1990), 179-185.

27. Survey of continuous and differentiable restrictions of real functions, Atas - 17th Coloquio Brasileiro de Matematica, IMPA Rio (1991), 84-94.
28. Continuous-, derivative-, and differentiable-restrictions of measurable functions, Fund. Math. 141 (1992), 85-95.
29. (With P. J. Chase and A. O. Pittenger) Order independence and factor convergence in iterative scaling, J. Lin. Alg. and Appl. 190 (1993), 1-38.
30. Intersections of continuous, Lipschitz, Hölder class, and smooth functions, Proc. A.M.S. 123 (1995), 1157-1165
31. Restriction theorems in real analysis, Real Analysis Exchange 20 (1995), 510-526.
32. C^1 -Intersection variant of Blumberg's theorem, Tatra Mtns. Math. Pubs. 14 (1998), 127-136.
33. (With E. Larsen and U. Darji) Concerning nowhere monotone functions and functions of nonmonotonic type, Proc. AMS 137 (1999), 173-182.
34. (With Stewart Baldwin) A simple proof that $(s)/(s^0)$ is a complete Boolean algebra, Real Analysis Exchange 24 (1998/99), 855-858.
35. Marczewski-Burstin-like characterizations of sigma algebras and ideals and measurable function, Colloq. Math. 82 (1999), 277-286 (with Hussain Elalaoui-Talibi).
36. (With George Kozlowski) Smooth Interpolation, Hölder continuity, and the Takagi - van der Waerden function, Amer. Math. Monthly 110 (February 2003), 142-147.

ii. Other applied and expository publications available to public:

37. (With J. Helton) Risk methodology for geologic disposal of radioactive waste: Effects of variable hydrologic patterns on the environmental transport model, NUREG/CR-1636, v. 4 (1981), 105 pgs.
38. (With J. C. Helton and R. C. Iman) Risk methodology for geologic disposal of radioactive waste: asymptotic properties of the environmental transport model, NUREG/CR-1636, v. 3 (1981), 173 pgs.
39. (With J. Helton, R. Iman, and S. Schreurs) Geologic waste disposal and a model for the surfact movement of radionuclides, Scientific Basis for Nuclear Waste Management, v. II (1980), 795-802.
40. Mathematicians in Industry - Experiences of One High-tech Migrant Worker, Alabama J. Math. 25 (Fall 2001), 3/22.

iv. Invited Papers Presented:

I have given a number of invited talks at Special Sessions of meetings of the Amer. Math. Soc. and at international mathematics conferences in recent years, including :

August, 1983: Was one of the 4 invited principal speakers at the 6th Summer Symposium on Real Analysis, held at the U. of Waterloo, Canada.

March, 1985: Special Session on Borel Structures and Classical Measure Theory held at Chicago AMS meeting.

January, 1987: Special Session on Classical Real Analysis at national AMS meeting in San Antonio.

January, 1988: Special Session on Measure Theory and Descriptive Set Theory at the national meeting in Atlanta (was actually co-organizer of this Special Session, by invitation of AMS).

November 1988: Special Session on Real Analysis at the fall AMS meeting in Lawrence, Kansas.

July, 1989: Gave invited hour talk at the 17th Brazilian Colloquium of Mathematics, held at IMPA in Rio.

June, 1990: Was one of the 4 invited principal speakers at the 14th Summer Symposium on Real Analysis, held in San Bernardino, CA.

January, 1994: Served as invited panelist for the ``National Security Agency Panel Discussion'' at the Amer. Math. Soc. meeting in Cincinnati (expenses for attending pd. by NSA).

April, 1994: Gave invited hour lecture at the annual Southeastern Section (AL, GA, TN, SC, NC) meeting of the Mathematical Association of America.

July, 1994: Gave invited hour lecture at the Joint US-Poland Conference-Workshop, held at the University of Lodz, Poland. Airfare paid by National Science Foundation.

June, 1996: Was one of the 4 invited principal speakers at the 21st Summer Symposium in Real Analysis, held in Windsor, Canada.

September, 1996: Was one of the 6 invited principal speakers at the 10th Summer School on Real Functions Theory, organized by the Academy of Sciences of the Slovak Republic and held in Liptovsky Jan, Slovakia.

June, 1999: Was one of the 9 invited principal speakers at the Workshop on Set Theory and Applications to Topology and Real Analysis, organized by the Math. Dept. of the Univ. of Gdansk.

February, 2001: Gave the 2001 Lewis-Parker Lecture at the annual meeting of the Alabama Association of College Teachers of Mathematics.

March, 2001: Was one of the 6 principal speakers at the Symposium on General Topology and Abstract Analysis held at Youngstown State Univ.

February, 2005: Gave the 2005 South Carolina State MAA Dinner Lecture.

I have given a number of invited departmental colloquium and research seminar hour talks about my research in pure mathematics at universities in the US and Europe in the past few years, including

SUNY Albany, U. California Santa Barbara, St. Olaf College, U. Minnesota, U. Wisconsin, Kings College Univ. of London, Univ. of Reading England, Wesleyan University, Emory U., Ga. State U., Columbus State U., U. Tennessee Chattanooga, Jacksonville State U., San Jose State Univ., Naval Post Graduate School, Univ. California Davis, Calif. Inst. of Technology, Univ. of Wisconsin Milwaukee, Univ. of Chicago, N. Carolina State U., Mississippi State U, Eötvös Lorand U. (Budapest), and Oxford University.

I have also given a talk titled "Mathematicians in Industry - Experiences of One High-Tech Migrant Worker" many times to student groups at Auburn and occasionally to student and faculty groups at other universities, including

Washington and Lee U., Mississippi State U., U. of Louisville, U. of Alabama Birmingham, Columbus State U., Troy State U, and U. So. Carolina Beaufort.

iii. Grant/Contract Proposals:

I have been directly involved (either individually or jointly) in some kind of extramurally funded project 25 of the last 28 years, bringing a total of around \$378,000 in contracts and grants to AU during the period.

1979: Sandia Laboratories Contract. I have spent 7 summers at Sandia Labs. While working there during summer 1978, I initiated discussions which eventually resulted in an AU contract. I returned to Sandia myself for the summer of 1979, so contract work was performed by J.P. Holmes (Principal Investigator), Coke Reed, and William Hudson, but I was primarily responsible for getting that contract.

\$19,984

1983: While Phillip Zenor was at TRW and I was Department Head at Auburn, negotiations set up annual TRW Grant. Zenor was primarily responsible for setup, but I have had sole responsibility for management and reapplications (which involved much paperwork every year).

\$ 5,000

1984: While I was working at TRW myself, I began negotiations which resulted in grant from TRW of North Star computer system (8 computers and Diablo printer).

\$29,400

1984: Continuation of TRW Grant.

\$ 5,000

1985: Continuation of TRW Grant.

\$10,000

1985: Phil Zenor brought a large USAF contract to the department. Part of the project was for me to continue research I began at TRW in 1983.
(My part):

\$7,098

1986: Continuation of TRW Grant. \$5,000

1987: Obtained grant (jointly with Geraldo DeSouza) from NSF to support Miniconferences in Harmonic and Real Analysis for three years.

\$12,000

1988: Continuation of TRW Grant. \$ 2,500

1989: Continuation of TRW Grant. \$ 2,500

1989: Obtained NSF Grant (jointly with Geraldo DeSouza) which named AU as host of NSF-CBMS Regional Conference in the Mathematical Sciences for summer 1989.

\$24,000

1990: Continuation of TRW Grant \$ 2,500

1990 Obtained NSF Grant (jointly with Geraldo DeSouza) to support miniconferences in Harmonic and Real Analysis for an additional three years.

\$18,000

1991: Continuation of TRW Grant \$ 2,500

1992: DeSouza and I submitted proposal in July to NSF to increase budget of 1990 Miniconference grant and to extend time period.

\$ 7,000

1993-4: I received a grant from the National Security Agency to support my 15-month participation in their Mathematical Sabbatical Program while I was on 1/2-time paid Professional Improvement Leave from Auburn.

\$96,400

1995 Obtained NSF Grant (jointly with Geraldo DeSouza) to support miniconferences in Harmonic and Real Analysis for an additional three years.

\$24,000

1998 Nominated two undergraduate students for Alabama EPSCoR Scholarships, which they won.

\$ 4,176

1998 Obtained NSF Grant (jointly with Geraldo DeSouza) to support miniconferences in Harmonic and Real Analysis for an additional three years.

\$30,000

1999 I received a grant from the National Security Agency to support my 6-month participation in their Mathematical Sabbatical Program while I was on 1/4-time paid Professional Improvement Leave from Auburn.

\$56,481

2003 Obtained NSF Grant (jointly with Geraldo DeSouza) to support miniconferences in Harmonic and Real Analysis for an additional three years.

\$15,000

C. Service

i. Service outside of Auburn:

Journal editing, writing reviews for Amer. Math. Soc., refereeing for various mathematics journals. Reviewing proposals for the National Science Foundation and the National Research Council. Long-time service to the U. S. Dept. of Defense and Dept. of Energy.

ii. Service at Auburn:

University:

Chmn., Univ. Recreational Services Committee (5 yrs.)
Chmn. , Engineering, Physical Sciences Mathematics Coordinating Committee (5 yrs.)
Faculty Senator (2 yrs.)
Univ. Graduate Council (3 yrs.)
Univ. Faculty Hearing Committee (3 yrs.)
Univ. Comm. on English as a Second Language, (1 yr.)
Ad-hoc Committee on Statistics at AU (on at least 3 different occasions)
Comm. to Review Applications for FY 93-94 Prof. Improv. Leaves
'92-'93 Ad Hoc Graduate Assistantship Administration Committee
'95-'96 Task Force on University Mission
'98-'00 Chmn Senate OASIS Policy Committee
'98-'00 Faculty representative on the OASIS Management Team
Auditing Committee, Phi Beta Kappa Chapter of AU
Fall '03 Served on Provost's Ad Hoc Committee to write AU Classroom Behavior Policy.
Spring '03 Chaired Phi Beta Kappa Committee to write Policy on Late Initiation.
'04-'05 Served on Provost's Decanal Review Committee to evaluate the COSAM Dean.

Department:

Chmn. Dept. Self Study Comm. (1 yr.)
Chmn. Dept. Grad Studies Comm. (7 yrs.)
Dept. Head (1.25 long yrs.)
Executive Committee (5 yrs. total)
Math. Dept. Librarian (since '97) (unofficial) (self-appointed)

Dept. Actuarial Committee

Departmental Liason to the Math. Ass'n America (since fall '02).