

**Three-Year Progress Report for New Doctoral Program
to Texas Higher Education Coordinating Board**

OFFICE FOR ACADEMIC AFFAIRS
08 APR -9 AM 8:51

INSTITUTION: Prairie View A&M University

DOCTORAL PROGRAM: PhD in Electrical Engineering

DATE APPROVED BY TEXAS HIGHER EDUCATION COORDINATING BOARD: January 2003

DATE FIRST STUDENTS ENROLLED: August 2003

1. Doctoral program student information

a.

Year* (Academic Year)	New Students		Total Students		Persistence Percent (Students continuing in program)	
	FT	PT	FT	PT	FT	PT
2003-2004	5	0	5	0	100	N/A
2004-2005	7	1	11	1	91	100
2005-2006	4	3	16	1	83	50

*Start with 1st program year FT=full-time PT=part-time

b. Percent of current full-time students financially supported and average dollar amount of assistance

Percent of current full-time students financially-supported is 100%.

Average dollar amount of assistance is \$24,000 per student per 12 months.

c. Ethnicity and gender of current students

Current students: 15 (Spring 2007)

Gender: Male (100%)

Ethnicity:

African American: 2 (14%)

Hispanic: 1 (7%)

Asian American: 2 (14%)

International: 10 (67%)

2. Doctoral program student performance

- a. Number of publications: 6
- b. Number of awards received: 2
- c. Number of students advanced to candidacy: 2

3. Doctoral faculty information

- a. Current program faculty FTE: 11
- b. List names and provide vitae for faculty added since time of Coordinating Board approval

Dr. Cajetan Akujuobi
Dr. Annamalai Annamalai
Dr. John O. Attia
Dr. Anil Kumar
Dr. Franklin Nkansah
Dr. James Northern
Dr. Pamela Obiomon
Dr. Lijun Qian
Dr. Matthew Sadiku
Dr. Dhadesugoor Vaman
Dr. Richard Wilkins

- c. Departures since time of Coordinating Board approval

One faculty (Dr. Robert Lacovara)
- d. Total number of publications in refereed journals since Coordinating Board approval (by faculty member)

Forty refereed journal papers have been published by faculty since Coordinating Board approval of program.
- e. Total number of grants/contracts received and amounts since Coordinating Board approval (by faculty member)

The total number of grants/contracts received since Coordinating Board approval is 19.

1. "Center for Battlefield Communications Research, CEBCOM", sponsored by ARO/ARL, Amount: \$2.42 Million. Duration: 1/04-1/09. Dr. Vaman (PI), Dr. Koay (Co-PI), Dr. Qian (Co-PI)
2. "Mixed-Signals Systems for High-Speed Networks, HBCU RISE Research and Education in Robust PAM/PWM Digital Controller Design", sponsored by NSF, Amount: \$1,000,000. Duration: 9/05-8/08. Dr. Attia (PI), Dr. Akujuobi (Co-PI), Dr. Sadiku (Co-PI), Dr. Qian (Co-PI)
3. "Research and Education in Robust PAM/PWM Digital Controller Design", sponsored by US Army, Amount: \$500,000. Duration: 10/06-9/09. Dr. Akujuobi (PI), Dr. Zhang (Co-PI)
4. "Center for Applied Radiation Research (CARR)" (Renewal), sponsored by NASA Johnson Space Center, Amount: \$5million/5years. Duration: 9/00-8/05. (8/04 to 9/05 – Amount \$1 Million), Dr. Wilkins (PI)
5. "Sensors Project – Modeling and Optimizing Templates for Synthetic Aperture Radar Images Using Genetic Algorithms", sponsored by LL Clarkson, Air Force Research Laboratory, Amount: \$358,514. Duration: 9/06-3/08. Dr. Northern (PI)
6. "Wavelet-Based Algorithm Development for Vibration Detection for the 100ft Pathfinder Plus Wing Using FemLab MultiPhysics Approach", sponsored by NASA Dryden, Amount: \$20,000. Duration: 11/05-12/06. Dr. Akujuobi (PI)
7. "Interoperability and Reliability Tests, Sprint Program at PVAMU. (Contract – Final Negotiation Completed)", sponsored by Sprint, Amount: \$66,000/Contract Period. Duration: 10/03-1/04. Dr. Akujuobi (PI)
8. "Exploratory Algorithm Development Study of a Wavelet-Based Adaptive Smart Scheme for Vibration Detection of an Aerodynamic System", sponsored by NASA Dryden, Amount: \$15,000. Duration: 11/02-12/03. Dr. Akujuobi (PI)
9. "Lightweight Shielding Materials with Carbon Nanotube Reinforcement – Phase II", sponsored by NASA Langley to Advanced Ceramics Inc., (Awarded) PVAMU sub contract, Amount: \$225,000/three years. Duration: 9/02-8/05. Dr. Wilkins (Co-PI)

10. "Multi-Functional Carbon Nanotube/Polymer Complex Composites for Space Radiation Shielding", sponsored by NASA Marshall Small Business Innovative Research (SBIR) Grant to Zyvex Inc., (Awarded) PVAMU sub-contract, Amount: \$20,700. Duration: 1/05-6/05. Dr. Wilkins (Co-PI)
11. "Radiation Shielding and Hydrogen Storage with Multifunctional Carbon", NASA Langley SBIR Grant awarded to Advanced Fuel Research, Inc., (Awarded) PVAMU sub-contract, Amount: \$13,000. Duration: 6/05-8/05. Dr. Wilkins (Co-PI)
12. "Radiation Assessment of the Proposed EVA Suit Swatches: Proton Threshold Measurements for MER Material Samples", NASA SBIR Grant awarded to MERCorp., (Awarded) PVAMU sub-contract, Amount: \$15,000. Duration: 6/05-8/05. Dr. Wilkins (Co-PI)
13. "Radiation Studies for Shielding Evaluation of Multi-functional Materials and Radiation Tolerance of Novel Electronics for Human Space Exploration at NASA/Ames, sponsored by NASA, Amount: \$20,000. Duration: 6/05-3/06. Dr. Wilkins (PI)
14. "Wireless Integrated Microsystems", sponsored by University of Michigan, Amount: \$160,000. Duration: 9/04 – 10/07, Dr. Obiomon (PI)
15. "Increasing Graduating Rates of Electrical and Computer Engr. Student: Integrated Recruitment and Retention Approaches", sponsored by the State of Texas, DOED, and TETC, Amount: \$188,063. Duration: 9/05-8/07. Dr. Attia (PI)
16. "Increasing the Quantity & Diversity of Students Pursuing Degrees in Electrical and Comp. Engr.", sponsored by the State of Texas, DOED, and TETC, Amount: \$52,449. Duration: 9/03-9/06. Dr. Attia (PI)
17. "Increasing Electrical Engineering Program Enrollment", sponsored by the State of Texas, DOED, and TETC, Amount: \$385,800. Duration: 1/01-4/07. Dr. Attia (PI)
18. "Launching the Texas Engineering Education Pipeline: Deploying the Infinity Program Statewide", sponsored by the State of Texas, DOED, and TETC, Amount: \$77,600. Duration: 1/01-4/07. Dr. Attia (PI)
19. "Recruitment and Retention for the Department of Electrical and Computer Engineering", sponsored by the State of Texas, Amount \$284,429, Duration: 7/06 – 8/08, Dr. Northern (PI).

Total Amount of Grants and Contracts: \$6,821,555

4. Program commitments (e.g., faculty additions, equipment purchases) made in response to consultant recommendations and/or in proposal. Report on status of each program commitment

(i) 6 faculty members have been added. Two additional faculty members might be employed in summer 2007.

(ii) About \$1,316,634.00 worth of equipment and software packages have been purchased for the program.

(iii) About 3000 books worth \$255,176 were purchased for the program. In addition, the Coleman Library at Prairie View A&M University has the following databases that are accessible for research: IEEE Xplore, CRC ENGnetBase, Discovering Science, EEVL, EI Compendex Web, InterScience (Wiley), INSPEC, SpringerLink, and Science Direct.

The Breakdown of expenditure up to 8/31/2007 is shown in Figure 1

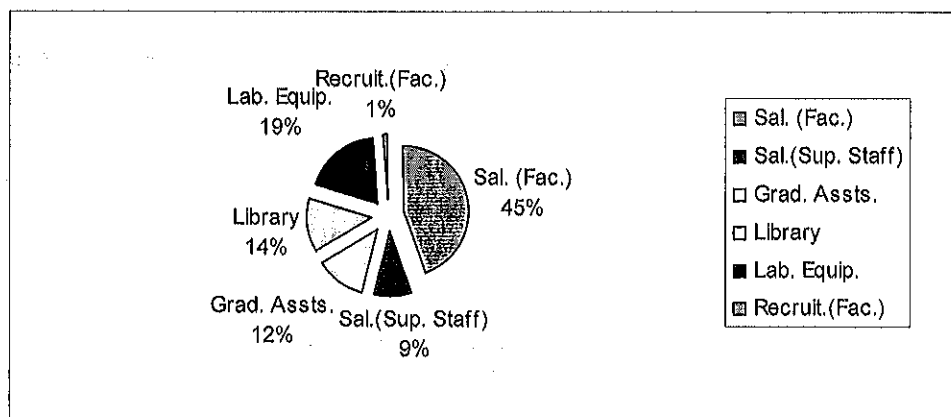


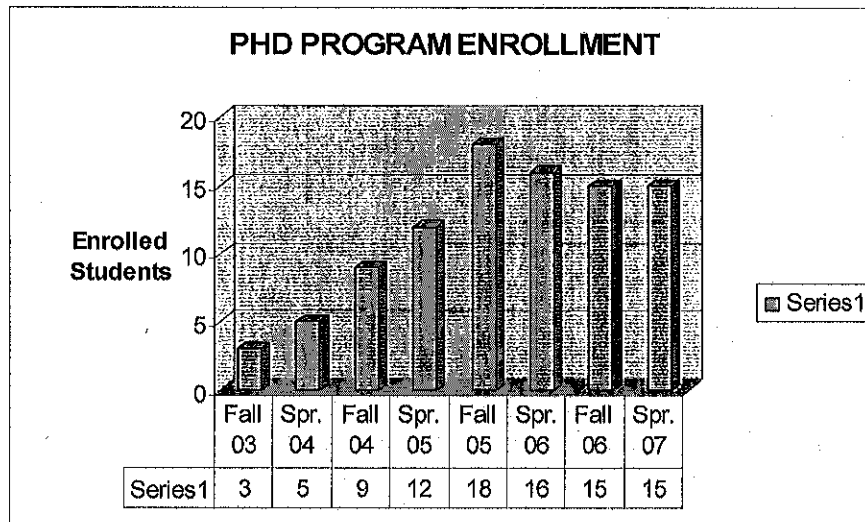
Figure 1 Breakdown of Expenditure Total amount of \$ 4,359,241

5. Program targets

- a. Have enrollment targets been met? If yes, list enrollments. If no, list enrollments and describe plans and timeline to reach target.

The enrollment targets were not met. The enrollment for the program is shown in Table 1.

Table 1 PhD Program Enrollment



The projected enrollment for the PhD program is shown in Table 2.

Table 2 Projected Enrollment for the PhD Program in Electrical Engineering

Semester	Projected Enrollment
Fall 2007	13
Spring 2008	14
Fall 2008	17
Spring 2009	18
Fall 2009	20

Recruitment Plans include the following activities: (i) Faculty members will visit Universities in Texas and outside the state of Texas to recruit students; (ii) recruit students at the National Society of Black Engineers annual conferences; (iii) use our federally funded projects to attract graduate students into the programs; (iv) recruit students during professional conferences; (v) hire faculty members to strengthen our research capabilities in Microelectronics, and Computer Engineering; (vi) hire an administrative assistant to assist with the graduate programs in the Electrical and Computer Engineering Department; (vii) increase the stipends for graduate students to attract students to the programs, (viii) join the national GEM program, and (ix) submit research proposals to obtain funds for prospective graduate students.

b. Have enrollment targets changed? How?

The enrollment targets have changed. The Department of Electrical and Computer Engineering has 16 faculty members. There is position for two additional faculty members. Three of the faculty members are also Department heads of various programs at Prairie View A&M University. In addition, the Department of Electrical and Computer Engineering administers four degree programs: (i) Bachelor of Science in Electrical Engineering, (ii) Bachelor of Science in Computer Engineering, (iii) Master of Science in Electrical Engineering and (iv) Doctor of Philosophy in Electrical Engineering. The Department will possibly manage around 25 doctoral students, assuming two doctoral students per faculty.

c. Have cost estimates changed? How?

The cost estimates have not changed.

6. Doctoral program research—new (funded internally or externally) research initiated with doctoral student involvement).

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Total Amount of Funded Doctoral Research Projects: \$5,610,214

7. Institutional plans for future program evaluation.

The Doctor of Philosophy program in Electrical Engineering will be evaluated by the following measures: (1) high placement of graduates in academic institutions, research organizations, governmental agencies and industries, (2) the number of

students enrolled in the program, (3) high retention rate of students admitted to the program, (4) students completion of the Ph.D. program in a timely manner, and (5) high publication records of graduates after 3 years in the field.

Graduates and ex-students of the program will be surveyed with regard to employment, publications record, satisfaction with the academic preparation obtained in the doctoral program. The surveys will also elicit suggestions for improvement of the Doctor of Philosophy in Electrical Engineering program. The surveys will be performed on (i) on-completion of program, and (ii) 3-years after graduation.

Three to five year program reviews will be conducted.

8. Other information related to program progress (please add any other pertinent information).

The Ph.D. degree program started in the Department of ECE, Prairie View A&M University in the fall 2003. Between the fall 2003 and now, there are many achievements that have very positive influence on the program success. Below is a list of achievements since the creation of the doctoral program in Electrical Engineering:

1. There is a continuous addition of students desiring to be admitted into the PhD in Electrical Engineering program.
2. There is a greater recognition of the state-of-the-art research activities of key Professors that will eventually make a mark in the overall improvement of the quality of the program consistent with other universities.
3. The ARO Center for Battlefield Communications (CeBCom) Research, which has been established as a Center through funding from Army Research Office (ARO), has produced quality papers in IEEE Journals and Premier IEEE Conferences. The total number of papers produced between the fall of 2003 and spring of 2007 totaled over 15. The presentations at different conferences has provided opportunities of praise of the achievements in these papers and also allowed additional invitations for the Professors to visit different institutions to present seminars and courses.
4. The presentation of Dr. Vaman at IEEE WCNC '2006 Wireless conference in Las Vegas (April 2006) allowed the Finland Industry-Academia group lead by Nokia and University of Helsinki to invite Dr. Vaman to give a three days

seminar on theoretical state-of-the-art wireless network architecture designs to only industry engineers with Ph.D., Professors with Ph.D. and Doctoral students.

5. Dr. Vaman was invited to present a paper on "Ad Hoc Wireless Networks Architecture Design" at the Wireless Symposium in May 2006. This year at the IEEE International Communications Conference (ICC 2007 June 2007), the presentation of Cognitive radio research paper resulted in recognition of our research by the faculty at Virginia Tech., University of Manchester, UK, and National University of Singapore. The presentation resulted in an invitation to Dr. Vaman to visit Singapore to give a series of lectures, which is expected to happen in July-August or December 2007.

6. At one of the Annual ARO review meetings that took place in 2006, our research work was commended and was honorably mentioned in a Pentagon Meeting in 2006. In addition, Army Battle Labs is considering working with the CeBCoM Center at Prairie View A&M University on a possible technology transfer.

7. ARO CeBCoM also has been asked for collaborative efforts by researchers at (i) Texas A&M University, College Station, (ii) University of Helsinki, and (iii) University of California, Los Angeles (UCLA). In addition, we have an active collaboration with University of California, San Diego (UCSD). Some of our research is mentioned in the Army/Navy MURI program by UCSD.

8. Four books were written by faculty.

9. Seventeen book chapters were written by faculty.

10. One patent was awarded to a faculty member – Dr. Qian (US Patent 6,944,470 awarded in September 2005).

11. Two patents were filed: (i) by Drs. Yongpeng Zhang, Cajetan M. Akujuobi, Charlie Tolliver, Warsame Ali and Shieh, and (ii) Dr. Vaman and Dr. Koay

12. Two faculty members (Dr. Attia and Dr. Akujuobi) were invited by overseas Universities to offer short courses in Electrical Engineering.

13. A faculty member (Dr. Vaman) was invited to be the Key Note Speaker in the IEEE Conference on "Enabling Technologies for Smart Appliances", ETSA 2005 held in Hyderabad, India during January 12-14, 2005.

14. A faculty member (Dr. Akujuobi) was appointed to the Curriculum Advisory Committee for Electrical Engineering Program at the Polytechnic of Namibia in Namibia, Southern Africa.

15. Mr. Emad Awada, a doctoral student, won the 2nd place in research presentations at the TAMUS Pathway Symposium that took place in November 2006.

16. Mr. Cary Smith, a doctoral student, won the 3rd place in research presentations at the TAMUS Pathway Symposium that took place in November 2006.

17. One student graduated from the doctoral program in Electrical Engineering in August 2007.

Report approved by:

A. Okeyerlathia 4/7/08
Director of Program Date

Harold T. Hamer 4/2/08
Dean of Academic Unit Date

A. Johnson-Smith 4/11/08
Chief Academic Officer Date