

# BACCALAUREATE AND MASTER'S DEGREES

## NEW PROPOSAL FORM: ONE-STEP PROCESS

*(Submit One Copy)*

## REVISED FORMAL PROPOSAL

Institution: Savannah State University

Institutional Contact (President or Vice President for Academic Affairs): Dr. Mary Wyatt, VPAA

Date: October 21, 2010

School/Division: College of Sciences and Technology

Department: Engineering Technology and Mathematics

Departmental Contact: Dr. Derrek B. Dunn, Dean or Dr. Jonathan Lambright, Chair

Name of Proposed Program/Inscription: Bachelor of Science in Engineering

Degree: Bachelor of Science in Engineering

Major: Engineering

CIP Code: 14.9999

Anticipated Starting Date: Fall 2011

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### **1. Program Description and Objectives:**

#### **a. Objectives of the program**

The objective of the proposed Bachelor of Science in Engineering (BSE) program is to be an instructional program that prepare individuals to apply mathematical and scientific principles to the solution of practical problems. The proposed BSE program has the following educational objectives and outcomes. BSE graduates should have:

- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component, or process to meet desired needs.
- an ability to function on multi-disciplinary teams
- an ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global and societal context

- a recognition of the need for, and an ability to engage in life-long learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

**b. Needs the program will meet**

The proposed Bachelor of Science in Engineering degree is designed to meet the needs of regional employers, and respond to the demands of economic development in the region. Currently, there is an unmet need for additional technically trained individuals in the coastal region of Georgia to support industrial and government employers and to enable sustainable economic growth for the region. This is particular true for aerospace, power generation, and marine industrials. A highly trained and skilled technical workforce is necessary to attract new industries, as well as to provide the resources for entrepreneurial develop of small business. Economic development and job growth occur when local universities provide the needed degree programs to train and produce a highly skilled and well-prepared technological labor force. The shortage of graduates trained in engineering disciplines is recognized as a worldwide problem, which makes it even more critical in demographic regions like the coastal region of Georgia, where employers currently seek such graduates and where more are needed for job growth and economic development.

Savannah State University has a fortuitous combination of intellectual resources to bring to bear in the field of engineering. Approximately 20 faculty members of the College of Sciences and Technology have Master's and/or Doctoral degrees in the field of engineering that coupled with years of teaching and research experience makes establishing a Bachelor of Science in Engineering program at Savannah State University, a viable option. This allows Savannah State University to be uniquely positioned to support the new program because of these core and cross-engineering disciplinary competencies. The new BSE program will take advantage of the breadth of college faculty with graduate degree in engineering whose background can contribute to a strong undergraduate engineering degree program. This implementation strengthens the infrastructure needed for this and other interdisciplinary programs at Savannah State University.

Savannah State University can leverage its historical connection to and experience with minorities and women to help increase diversity in the Engineer field in this state, nation and the world. Currently North Carolina A&T State University is the only HBCU with a BSE Program in the United States. The proposed Savannah State University Engineering program does not duplicate any other program in the state because of its potential role with respect to diversity in engineering and opportunity for minority students that thrive in environments like that at this University. Students that traditionally flourish at Savannah State University do not in general do as well in collaborative program or graduate at the same rate.

**c. Brief explanation of how the program is to be delivered**

It is expected that the proposed Bachelor of Science in Engineering program will be delivered to on-campus students and to off-campus students via distance education. Place-bound students and working adults will be able to complete the degree primarily via the Internet/online or eLearning. It is also anticipated that professionals from local and regional industries seeking to maintain or

upgrade their job skills will also avail themselves of the program. The College of Sciences and Technology was recently awarded a title III grant valued at \$1million to develop the needed infrastructure to stream in an asynchronous and synchronous manner class lecture and lab material to off-campus students who may enroll in the BSE program via distance education. The college is expected to develop less than 50% of the BSE course work to be delivered on-line.

#### **d. Prioritization within the institution's strategic plan**

Savannah State University is committed to “developing productive members of a global society through high quality instruction, scholarship and community involvement.” The College of Sciences and Technology is committed to offering the BSE degree program that will produce graduates equipped with a solid scientific foundation, which includes problem solving, and design skills necessary for success in their chosen occupation.

The proposed BSE program supports the institution's strategic plan. The university's strategic plan focuses on "value added" and demonstrates the support of expanding opportunities for the university to meet the needs of the local community and greater low country of Georgia. The proposed new BSE program encompasses and is integral to the central focus of the strategic plan by providing opportunities for students (traditional and non-traditional) to add value to the local community, low country region and state. Once approved and implemented, the new BSE program will align with Goals 1 and 2 of SSU's Strategic Plan “Vision 2018”.

Goal 1: Savannah State University will maximize its comparative advantage through academic excellence, applied learning, effective educational support, and community involvement.

Goal 2: Savannah State University will continue to build its institutional capacity through the continuous improvement and expansion of academic programs, student support, infrastructure, technology, and community relations.

Additionally, the proposed new program aligns with the USG's vision, mission, and strategic goals.

#### **Board of Regent's Vision**

The University System of Georgia will create a more educated Georgia, well prepared for a global, technological society, by providing first rate undergraduate and graduate education, leading-edge research, and committed public service.

#### **Board of Regent's Mission**

The mission of the University System of Georgia is to contribute to the educational, cultural, economic, and social advancement of Georgia by providing excellent undergraduate general education and first-rate programs leading to associate, baccalaureate, masters, professional, and doctorate degrees; by pursuing leading-edge basic and applied research, scholarly inquiry, and creative endeavors; and by bringing these intellectual resources, and those of the public libraries, to bear on the economic development of the State and the continuing education of its citizens.

#### **Board of Regent's Strategic Goals**

One: Renew excellence in undergraduate education to meet students' 21st century educational needs.

Two: Create enrollment capacity to meet the needs of 100,000 additional students by 2020.

Three: Increase the System's participation in research and economic development to the benefit of a global Georgia. Enhance and encourage the creation of new knowledge and basic research across all disciplines.

## **2. Description of the program's fit with the institutional mission and nationally accepted trends in the discipline.**

### **Mission of Savannah State University**

Savannah State University, the oldest public historically black university in the State of Georgia, develops productive members of a global society through high quality instruction, scholarship, research, service and community involvement. The University fosters engaged learning and personal growth in a student-centered environment that celebrates the African American legacy while nurturing a diverse student body. Savannah State University offers graduate and undergraduate studies including nationally accredited programs in the liberal arts, the sciences and the professions.

Savannah State University is committed to "developing productive members of a global society through high quality instruction, scholarship and community involvement." The College of Sciences and Technology is committed to offering proposed Bachelor of Science in Engineering program that will produce general engineering education that covers topics that prepare students to be a broadly educated engineer: math, physics, statics, dynamics, thermodynamics, computer programming, and electrical circuits. The program includes communication skills as well as general education requirements. This proposal is consistent with the USG System goal to "create a more educated Georgia." The development of this degree program is a high priority in the current academic mission of Savannah State University.

## **3. Description of how the program demonstrates demand and a justification of need in the discipline and geographic area and is not unnecessary program duplication.**

According to the Bureau of Labor Statistics, the overall engineering employment is expected to grow by 11 percent over the 2008–18 decade.

The proposed Bachelor of Science in Engineering degree is unique in that the curriculum provides a general engineering education that covers topics that prepare students to be a broadly educated engineer including math, physics, statics, dynamics, thermodynamics, computer programming, and electrical circuits, among others. No program in the University System of Georgia currently provides this curriculum. Hence, graduates of the proposed program will be well equipped to handle engineering problems of a broad and interdisciplinary nature.

## **4. Brief description of institutional resources that will be used specifically for the program (e.g., personnel, library, equipment, laboratories, supplies & expenses, capital expenditures at program start-up and when the program undergoes its first comprehensive program review.**

The College of Sciences and Technology (COST) comprises four departments: the Department of Natural Sciences, the Department of Engineering Technology and Mathematics, the Department of Naval Science and the Department of Military Science. It offers Bachelor of Science degree programs with majors in Biology, Chemistry, Environmental Sciences, Marine Science, Mathematics, Civil Engineering Technology, Computer Science Technology, and Electronics Engineering Technology.

The College of Sciences and Technology has well developed research laboratories located in Drew-Griffith, Herty, Hubert A, B, C & D and the Marine Science buildings. These laboratories are fully equipped with the instruments required to conduct instruction and research in biology, biomedical science, chemistry, forensic science, and marine science, and engineering. The engineering labs include an iPodcasting Lab, Autocad Lab, Linux Lab, Electronics Engineering Lab, and Civil Engineering Lab. Our facilities are favorably comparable to excellent programs at other institutions. Additionally, the College is listed on the USG Capital Budget Recommendation web site to receive nearly \$37.7 million over the next four years that will add nearly 130,000 square feet of classroom and laboratory instructional space for the college's degree programs in marine and environmental sciences and engineering. See Appendix C.

The Asa H. Gordon Library offers a variety and wealth of informational resources and services to the university community. The library ensures access to resources to serve both the research and general needs of undergraduates, graduate students, and faculty through its collections of print and electronic journals, GALILEO databases (a project funded by the Board of Regents of the University System of Georgia), interlibrary loans, a reference collection, and archival materials that relate to Savannah State University's history.

The library houses and provides access to approximately 190,209 volumes of books, 30,000 bound periodicals, 548,273 microforms and print periodical subscriptions, 4,000 audio visual materials, various educational media materials including television monitors, projectors, and distance learning facilities, and over 240 electronic databases including JSTOR. The library also has study and conference rooms that are equipped with computers with access to the Internet along with printing capabilities. The Gordon Library is centrally located within close proximity to all institutional facilities on campus. Access to the library is provided through two main ground level entrances. The east entrance is ADA accessible and is equipped with an entrance ramp and an automatic door. A newly renovated cafe is found on the first floor and provides an informal area for patrons to enjoy food and drink and quiet individual or group study. Students have access to over 95 computers located in study rooms, the computer lab and the reference area of the library.

In addition to its resources and collections, the Asa H. Gordon Library also offers services and programs desired by the faculty, staff, and students of Savannah State University. The library is the most reliable point of access for needed materials and information. The library's online catalog is located at <http://gil.savannahstate.edu>. The Voyager system, an integrated automated library system, enables patrons to access the library catalog 24/7 anywhere there is an Internet connection. Through interlibrary loan services, patrons may obtain materials that are not owned by the library or through GIL Express, a resource sharing initiative that allows students, faculty, and staff to borrow all eligible circulating materials at all 35 USG libraries. Faculty course

reserves services are available for monographs, articles, and other instructional materials and electronic reserves services are also available and provide access through the library's catalog. Reference services are provided by librarians who assist patrons in locating and evaluating information to meet their research needs. Also the library provides instruction to any class offered at Savannah State University. Through this service, the objectives for Information Literacy Instruction and support for E-learning courses is also provided. The library has a well-trained staff available to assist the campus community at all times during the hours of operation.

If approved the proposed program will undergo its first comprehensive program review after its fourth year of operation.

**5. Curriculum: List the entire course of study required and recommended to complete the degree program. Provide a sample program of study that would be followed by a representative student.**

<b>Core Curriculum (Areas A, B, C, D, E and additional requirements) .....</b>	<b>48 Credit Hours</b>
<b>A.</b> ENG 1101, ENG 1102 and MATH 1113	9 Credit Hours
<b>B.</b> Institutional Options (AFRS 1501, HUMN 1201)	5 Credit Hours
<b>C.</b> Humanities/ Fine Arts	6 Credit Hours
<b>D.</b> CSCI 1301 or CSCI 1371, CHEM 1211/1211L, BIOL 1107/1107L	11 Credit Hours
<b>E.</b> Social Sciences	12 Credit Hours
<b>Additional University Requirements</b>	5 Credit Hours

<b>Area F.....</b>	<b>17 Credit Hours</b>
ENGR 1101 Introduction to Engineering	1 Credit Hours
MATH 2101 Calculus I	4 Credit Hours
MATH 2111 Calculus II	4 Credit Hours
PHYS 2211K Principle of Physics I	4 Credit Hours
PHYS 2212K Principle of Physics II	4 Credit Hours

<b>Advance Mathematics Courses.....</b>	<b>14 Credit Hours</b>
MATH 3101 Linear Algebra	3 Credit Hours
MATH 3301 Differential Equations	4 Credit Hours
MATH 3501 Numerical Analysis	3 Credit Hours
MATH 3602 Linear & Discrete Mathematics	4 Credit Hours

<b>Engineering Core Courses.....</b>	<b>20 Credit Hours</b>
ENGR 2001 Principles and Applications of Engineering Materials	3 Credit Hours
ENGR 2025 Introduction to Signal Processing	4 Credit Hours
ENGR 2030 Introduction to Computer Engineering	3 Credit Hours
ENGR 2031 Digital Design Lab	2 Credit Hours
ENGR 2040 Circuit Analysis	3 Credit Hours
ENGR 2201 Statics for Engineers	2 Credit Hours
ENGR 2202 Dynamics of Rigid Bodies	3 Credit Hours

<b>Advance Engineering Core Courses.....</b>	<b>18 Credit Hours</b>
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CSCI 3385 Computer Network and Design	3 Credit Hours
ENGR 3001 Mechanics of Deformable Bodies	3 Credit Hours
ENGR 3322 Engineering Thermodynamics	3 Credit Hours
ELET 3501K Control Systems	3 Credit Hours
ENGT 3701 Engineering Economy	3 Credit Hours
ENGR 3770 Statistics & Applications	3 Credit Hours

<b>Engineering Design Courses.....</b>	<b>8 Credit Hours</b>
ENGR 3110 Creative Decisions & Design I	3 Credit Hours
ENGR 4110 Creative Decisions & Design II	5 Credit Hours

**a. Clearly differentiate which courses are existing and which are newly developed courses. Include the course titles as well as acronyms and credit hour requirements associated with each course.**

Existing Courses

CSCI 3385 Computer Network and Design	3 Credit Hours
ELET 3501K Control Systems	3 Credit Hours
ENGR 1101 Introduction to Engineering	1 Credit Hours
ENGR 2001 Principles and Applications of Engineering Materials	3 Credit Hours
ENGR 2025 Introduction to Signal Processing	4 Credit Hours
ENGR 2030 Introduction to Computer Engineering	3 Credit Hours
ENGR 2031 Digital Design Lab	2 Credit Hours
ENGR 2040 Circuit Analysis	3 Credit Hours
ENGR 2201 Statics for Engineers	2 Credit Hours
ENGR 2202 Dynamics of Rigid Bodies	3 Credit Hours
ENGR 3001 Mechanics of Deformable Bodies	3 Credit Hours
ENGR 3322 Engineering Thermodynamics	3 Credit Hours
ENGR 3770 Statistics & Applications	3 Credit Hours
ENGT 3701 Engineering Economy	3 Credit Hours
MATH 2101 Calculus I	4 Credit Hours
MATH 2111 Calculus II	4 Credit Hours
MATH 3101 Linear Algebra	3 Credit Hours
MATH 3301 Differential Equations	4 Credit Hours
MATH 3501 Numerical Analysis	3 Credit Hours
MATH 3602 Linear & Discrete Mathematics	4 Credit Hours
PHYS 2211K Principle of Physics I	4 Credit Hours
PHYS 2212K Principle of Physics II	4 Credit Hours

Newly Developed Courses

ENGR 3110 Creative Decisions & Design I	3 Credit Hours
ENGR 4110 Creative Decisions & Design II	5 Credit Hours

**b. Append course descriptions for all courses (existing and new courses).**  
Please see Appendix A for course descriptions.

**c. When describing required or elective courses, list all course prerequisites.**

Please see Appendix A for course prerequisites.

**d. Provide documentation that all courses in the proposed curriculum have met all institutional requirements for approval.**

The proposed new degree curriculums with new and existing courses have been reviewed and approved at various institutional levels including department, college and university levels and has been approved for submission to the Board of Regents. Finally, the proposed new degree curriculum has the full support and approval of the Dean of the College of Sciences and Technology, the Vice President for Academic Affairs and the University's President.

**e. Append materials available from national accrediting agencies or professional organizations as they relate to curriculum standards for the proposed program.**

Please see Appendix B.

**f. Indicate ways in which the proposed program is consistent with national standards.**

The proposed program is consistent with national standards because it is designed to meet accreditation requirements of EAC-ABET. Also, the proposed BSE program is similar to programs offered by other well established and nationally known EAC-ABET accredited programs at the following institutions:

- Dartmouth College
- East Carolina University
- Michigan Technological University
- Milwaukee School of Engineering
- Stanford University
- Texas Christian University
- University of Alaska at Anchorage
- Joint University of North Carolina at Asheville – North Carolina State University
- University of Pennsylvania
- The University of Tennessee at Martin

**g. If internships or field experiences are required as part of the program, provide information documenting internship availability as well as how students will be assigned and supervised.**

Although students enrolled in the proposed program will be encouraged to attain as many internship or field experiences as possible during their enrollment in the degree program. However, it will not be a requirement for students to obtain internships or field experiences as part of the degree program requirements.

**h. Indicate the adequacy of core offerings to support the new program.**

The current frequency of offerings for courses in the core of this proposed curriculum is adequate for the anticipated enrollment in this program. Currently, there are several sections of core courses to support the new program. These courses are offered multiple times every year in Engineering Technology, Natural Sciences and Mathematics, Social Science and Liberal Arts. Initially, it is anticipated that only one or two sections of the core courses will be required for new program students



**6. Admissions criteria. Please include required minima scores on appropriate standardized tests and grade point average requirements.**

The minimum requirement for admission to this degree program is listed below. Additionally, incoming students are required to attend mandatory advisement by faculty to ensure that they have the requisite background in science and mathematics for success in the degree.

**Regular Admissions Requirements:**

- Freshman Index of 1940\*
- Minimum 1010 SAT (Math + Critical Reading) or 21 ACT (composite). *State minimum requirements for each portion of the SAT/ACT 430 Critical Reading, 400 Math; 17 English, 17 Math*
- Minimum High School GPA: 2.2
- 16 College Preparatory Curriculum Units

In addition to meeting the above admissions criteria, applicants graduating, or who would have graduated, from high school within the past five years must meet the requirements of the college preparatory curriculum (CPC) of the Board of Regents. *\*SAT Freshman Index = Combined SAT I scores + (High School Grade Point Average x 500). ACT Freshman Index = (High School GPA x 500) + (ACT composite x 42) + 88. The high school grade point average is calculated only on CPC course work required for admission.*

**College Preparatory Curriculum (CPC) Requirements:**

Sixteen CPC units in the areas below are required for regular admission to Savannah State University.

<b>CPC Area (Units)</b>	<b>Instructional Emphasis/Courses</b>
English (4)	<ul style="list-style-type: none"><li>• grammar and usage</li><li>• literature (American and world)</li><li>• advanced composition skills</li></ul>
Mathematics (4)	<ul style="list-style-type: none"><li>• two courses in algebra, one in geometry, and one advanced mathematics course</li></ul>
Science (3)	<ul style="list-style-type: none"><li>• physical science</li><li>• two laboratory courses from biology, chemistry, or physics</li></ul>
Social Science (3)	<ul style="list-style-type: none"><li>• acceptable social science courses</li></ul>
Foreign Language (2)	<ul style="list-style-type: none"><li>• two courses in one language emphasizing speaking, listening, reading, and writing</li></ul>

**7. Availability of assistantships (if applicable).**

Not applicable.

**8. Student learning outcomes and other associated outcomes of the proposed program.**

Based upon national accreditation of the Engineering Accreditation Committee (EAC) of the Accreditation Board for Engineering and Technology (ABET) criteria, learning outcomes Engineering students will be expected to possess upon completion of their course work at Savannah State University include:

- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

- an ability to function on multidisciplinary teams
- an ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- a recognition of the need for, and an ability to engage in life-long learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

**9. Administration of the program:**

**a. Indicate where the program will be housed within the academic units of the institution.**

The proposed Bachelor of Science in Engineering program will be housed in Department of Engineering Technology and Mathematics within the College of Sciences and Technology at Savannah State University.

**b. Describe the administration of the program inclusive of coordination and responsibility.**

The day-to-day operation of the proposed Bachelor of Science in Engineering program will be handled by a coordinator who will be a full-time faculty member in Department of Engineering Technology and Mathematics and will report to the chairperson of department. The Program Coordinator will serve as the administrative head of the program with the responsibilities of:

- selection, supervision, and support of the faculty
- selection and supervision of the students
- operation of support facilities for faculty and students

**10. Waiver to Degree-Credit Hour (if applicable): If the program exceeds the maximum credit hour requirement at a specific degree level, then provide an explanation supporting the increase in hours (Note: The maximum for bachelor's degrees is 120-semester credit hours and the maximum for master's degrees is 36-semester credit hours).**

The proposed program does not require a waiver to degree-credit hour. The maximum credits for the BSE degree is 120 semester credit hours plus 5 semester credits of additional university requirements for a total of 125 semester credit hours.

**11. Accreditation: Describe disciplinary accreditation requirements associated with the program (if applicable).**

The proposed Bachelor of Science in Engineering will follow the accreditation requirements of the Engineering Accreditation Committee (EAC) of the Accreditation Board for Engineering and Technology (ABET).

**12. Projected enrollment for the program especially during the first three years of implementation. Please indicate whether enrollments will be cohort-based.**

It is projected that approximately 30 students will initially enroll in the program. As the program develops and grows, it is anticipated that an average increase of 15-25 students per year will continue to enroll as the program becomes known.

<b><u>ENROLLMENT PROJECTIONS</u></b>	<b><u>First Year</u></b>	<b><u>Second Year</u></b>	<b><u>Third Year</u></b>	<b><u>Fourth Year</u></b>
New	30	40	50	60
Existing	0	22	46	72
Shifted from other programs	0	0	0	0
<b>Total Majors</b>	<b>30</b>	<b>62</b>	<b>96</b>	<b>132</b>

The enrollment projections are not cohort-based. These projections are based on survey results which indicate that approximately 30 students will enroll in the first two years of the program.

### 13. Faculty

**a. Provide an inventory of faculty directly involved with the administration of the program. For each faculty member, provide the following information:**

Appendix C contains all the resumes of faculty who will be involved in the proposed program.

<b><u>Faculty Name</u></b>	<b><u>Rank</u></b>	<b><u>Highest Degree</u></b>	<b><u>Degrees Earned</u></b>	<b><u>Academic Discipline</u></b>	<b><u>Current Workload</u></b>
Sylvester Chukwukere	Assistant Professor	M.S.	B.S., M.S.	Electrical Engineering	12 credits per Semester
Derrek B. Dunn	Professor	Ph.D.	B.S., M.S., Ph.D.	Electrical Engineering	3 credits per Semester
Kuppuswamy Jayaraman	Associate Professor	Ph.D.	B.S., M.S., Ph.D.	Environmental Engineering	12 credits per Semester
Alex Kalu	Professor	Ph.D.	B.S., M.S., Ph.D.	Electrical/Industrial Engineering	12 credits per Semester
Deidre Paris	Visiting Professor	Ph.D.	B.S., M.S., Ph.D.	Civil and Construction Engineering	9 credits per Semester
Mohamad Mustafa	Professor	Ph.D.	B.S., M.S., Ph.D.	Civil and Structural Engineering	12 credits per Semester
Henry Taylor	Assistant Professor	M.S.	B.S., M.S.	Mechanical Engineering	12 credits per Semester
Asad Yousuf	Professor	Ed.D.	B.S., M.S., Ed.D.	Workforce Education	12 credits per Semester

**Explanation of how workload will be impacted by the new program:** the new program will not impact the workload of the faculty since all the courses that are required for the BSE are offered as part of Savannah State University participation in the GTREP program and other undergraduate degree program such as Mathematics.

**Expected responsibilities in the program:** The Faculty listed above will be required to teach undergraduate level BSE courses and advise the BSE students.

Total Number of Faculty: \_\_\_\_\_7\_\_\_\_\_

**b. If it will be necessary to add faculty in order to begin the program, give the desired qualifications of the persons to be added, with a timetable for adding new faculty and plan for funding new positions.**

Currently, the Department of Engineering Technology and Mathematics has adequate faculty to deliver the BSE program in the first year. It is anticipated as the program grows, one new BSE faculty will be added each year starting in the 2nd year. The expertise of future additional faculty will be identified according to the teaching needs of the department and college. The desired qualifications of the new faculty include either a Ph.D. in Electrical Engineering, Mechanical Engineering, Technology Management, Energy and Environmental Systems, Applied Mathematics or related fields. Funding for the new positions can come from the enrollment growth funds and reallocation of current faculty positions in the College of Sciences and Technology.

**14. Fiscal, Facilities, Enrollment Impact, and Estimated Budget**

**a. Provide a narrative that explains how current institutional resources will be expended specifically for this program. Provide a narrative that explains how the institution will fiscally support the establishment of the new program through the redirection of existing resources and acquisition of new resources. Indicate whether the institution will submit a request for new funds as part of its budget request. The narrative also needs to explain the basis of the institution’s projections with regard to anticipated EFT, head count, student enrollment, estimated expenditures, and projected revenues.**

Savannah State University will support the BSE program by sharing the resources of faculty who currently operate SSU’s GTREP, Computer Science Technology, Electronic Engineering Technology, and Civil Engineering Technology program to the BSE program. Also, due to substantial increase in the student body of the College of Sciences and Technology over 10% during the past two years, SSU will continue to reallocate resources and hire faculty to support the new BSE program. Savannah State University will not be submitting a request for new funds to support this program.

	First Year FY	Second Year FY	Third Year FY	Fourth Year FY
<b>I. ENROLLMENT PROJECTIONS</b>				
<b>Student Majors</b>		22	46	72
Shifted from other programs	0	0	0	0
New to the institution	30	40	50	60
<b>Total Majors</b>	30	62	96	132
<b>Course Sections Satisfying Program Requirements</b>				
Previously existing	6	12	18	24
New	4	8	12	16
<b>Total Program Course Sections</b>	10	20	30	40
<b>Credit Hours Generated by Those Courses</b>				
Existing enrollments	648	1489	1500	2160
New enrollments	432	743	1380	1800
<b>Total Credit Hours</b>	1080	2232	2880	3960
<b>DEGREES AWARDED</b>	0	0	0	15

<b>II. EXPENDITURES</b>	EFT Dollars	EFT Dollars	EFT Dollars	EFT Dollars
<b>Personnel – reassigned or existing positions</b>				
Faculty	\$75,000	\$37,500	\$18,750	\$9,375
Part-time Faculty	\$12,000	\$6,000	\$3,000	\$0
Graduate Assistants	\$0	\$0	\$0	\$0
Administrators	\$0	\$0	\$0	\$0
Support Staff	\$0	\$0	\$0	\$0
Fringe Benefits	\$23,250	\$11,625	\$5,812	\$2,906
Other Personnel Costs	\$0	\$0	\$0	\$0
<b>Total Existing Personnel Costs</b>	\$110,250	\$55,125	\$27,562	\$12,281

<b>EXPENDITURES (Continued)</b>				
<b>Personnel – new positions</b>				
Faculty	\$61,000	\$61,000	\$61,000	\$61,000
Part-time Faculty	\$24,000	\$24,000	\$24,000	\$24,000
Graduate Assistants	\$0	\$0	\$0	\$0
Administrators	\$0	\$0	\$0	\$0
Support Staff	\$35,000	\$0	\$0	\$0
Fringe Benefits	\$29,760	\$18,910	\$18,910	\$18,910
Other personnel costs	\$0	\$0	\$0	\$0
<b>Total New Personnel Costs</b>	\$149,760	\$103,910	\$103,910	\$103,910
<b>Start-up Costs (one-time expenses)</b>				
Library/learning resources	\$5,000	\$0	\$0	\$0
Equipment	\$50,000	\$0	\$0	\$0
Other	\$0	\$0	\$0	\$0
Physical Facilities: construction or major renovation	\$100,000	\$0	\$0	\$0
<b>Total One-time Costs</b>	\$155,000	\$0	\$0	\$0
<b>Operating Costs (recurring costs – base budget)</b>				
Supplies/Expenses	\$600	\$600	\$600	\$600
Travel	\$500	\$500	\$500	\$500
Equipment	\$500	\$0	\$0	\$0
Library/learning resources	\$500	\$500	\$500	\$500
Other	\$0	\$0	\$0	\$0
<b>Total Recurring Costs</b>	\$2,100	\$1,600	\$1,600	\$1,600
<b>GRAND TOTAL COSTS</b>	\$306,860	\$159,035	\$133,072	\$118,331

<b>III. REVENUE SOURCES</b>				
<b>Source of Funds</b>				
Reallocation of existing funds	\$0	\$0	\$0	\$0
New student workload				
New Tuition	\$64,110	\$132,494	\$205,152	\$282,084
Federal funds	\$0	\$0	\$0	\$0
Other grants	\$0	\$0	\$0	\$0
Student fees	\$12,822	\$26,498	\$41,030	\$56,416
Other	\$0	\$0	\$0	\$0
New state allocation requested for budget hearing	\$0	\$0	\$0	\$0
<b>Nature of Funds</b>				
Base budget	\$76,932	\$158,992	\$246,155	\$338,500
One-time funds	\$0	\$0	\$0	\$0
<b>GRAND TOTAL REVENUES</b>	\$76,932	\$158,992	\$246,155	\$338,500

### Facilities Information for New Academic Programs

Proposed Location for the Program: College of Science and Technology's Hubert Hall Bldgs. A, B, C, D and Herty Hall

Floor area required for the program (gross and net square feet): 97,000 Square Feet

Type of spaces required:

- Number of classrooms \_\_\_\_\_
- Number of labs \_\_\_\_\_
- Number of offices \_\_\_\_\_
- Other spaces \_\_\_\_\_

Place an "X" beside the appropriate selection:

X  Existing facility will be used as is (area square footage): 97,0000 Square Feet

\_\_\_\_\_ Existing facility will require modification (area square footage):

Projected renovation cost:

Estimated relocation cost:

Total funding required:

Source of Funding:

\_\_\_\_\_ Construction of new facilities will be required (area square footage):

Estimated construction cost:

Estimated total project cost:

Proposed source of funding:

List any infrastructure impacts that the program will have (i.e., parking, power, HVAC, etc.) and indicated estimated cost and source of funding.

Other comments:

*Note: A system office Facilities Project Manager (through the Office of Facilities) may contact you with further questions separate from the review of the new academic program.*

# **Appendix A – Existing and Newly Developed Courses**



### Existing Courses

CSCI 3385 Computer Network and Design 3 Credit Hours

Introduction of distributed system architecture, data transmission, protocol levels, types of network layers, terminal based networks, modems, and multiplexers. A unique feature of this course is that students set up a LAN using Solaris, Novell and Windows NT. The course provides hands-on experience for students. Prerequisite: CSCI 1301

ELET 3501K Control Systems 3 Credit Hours

Analysis and design of linear feedback control systems are studied. Nyquist's and Routh's stability criteria, Bode plots, transient behavior, static error coefficients, and the steady-state behavior of various system types are presented. The root-locus method and block diagram representation and simplification are also included. Classroom instruction will be enhanced by laboratory work. Prerequisites: ELET 3111K and MATH 2111

ENGR 1101 Introduction to Engineering 1 Credit Hours

The course consists of material and learning activities that would build and sustain the interest of the student in engineering and that would produce behavioral modification in the student to adequately prepare him/her for a successful academic career in engineering.

ENGR 2001 Principles and Applications of Engineering Materials 3 Credit Hours

The structure-property-processing-performance relationships of engineering materials are described. Materials selection is treated as a part of engineering design. Prerequisites: CHEM 1211 and 1211L

ENGR 2025 Introduction to Signal Processing 4 Credit Hours

Introduction to signal processing for discrete-time and continuous-time signals. Filtering. Frequency Response. Fourier Transform. Z Transform. Laboratory emphasizes computer-based signal processing. Prerequisites: MATH 2511 and CSCI 1502

ENGR 2030 Introduction to Computer Engineering 3 Credit Hours

Computer system and digital design principles. Architectural concepts, software, Boolean algebra, number systems, combinational datapath elements, sequential logic, and storage elements. Design of DRAM control and I/O bus. Prerequisite: CSCI 1371

ENGR 2031 Digital Design Lab 2 Credit Hours

Design and implementation of digital systems, including a team design project. CAD tools, project design methodologies, logic synthesis, and assembly language programming. **(1-3-2)**  
Prerequisite: ENGR 2030

ENGR 2040 Circuit Analysis 3 Credit Hours

Basic concepts of DC and AC circuit theory and analysis.  
Prerequisites: ENGR 2025, PHYS 2212, and MATH 3301

ENGR 2201 Statics for Engineers 2 Credit Hours

Elements of statics in two and three dimensions, centroids, and friction.  
Prerequisites: MATH 2111 and PHYS 2211

ENGR 2202 Dynamics of Rigid Bodies 3 Credit Hours  
Kinematics and dynamics of particles and rigid bodies in one, two, and three dimensions. Work-energy and impulse-momentum concepts. Prerequisites: ENGR 2201 and CSCI 1371

ENGR 3001 Mechanics of Deformable Bodies 3 Credit Hours  
Stress and strain, axially loaded members, torsion of circular members, bending of beams, transformation of stress and strain and column buckling. Prerequisites: ENGR 2201 and MATH 3301

ENGR 3322 Engineering Thermodynamics 3 Credit Hours  
Introduction to thermodynamics. Thermodynamic properties, energy and mass conservation, entropy and the second law. Second-law analysis of thermodynamic systems, gas cycles, vapor cycles. Prerequisites: PHYS 2211 General Physics II, MATH 3301, and CSCI 1371

ENGR 3770 Statistics & Applications 3 Credit Hours  
Introduction to probability, probability distributions, point estimation, confidence intervals, hypothesis testing, linear regression, and analysis of variance. Also applications in the engineering planning and Design are discussed. Prerequisite: Math 2511

ENGT 3701 Engineering Economy 3 Credit Hours  
A study of the fundamental concept and analytical tools of engineering economy. The elements of engineering decision-making process, compound interest and equivalence are examined. This course also covers present worth, uniform annual cost, rate of return and depreciation method as well as income taxes to help make the correct engineering business decision. Prerequisites: MATH 1113, permission of the instructor

MATH 2101 Calculus I 4 Credit Hours  
An integrated approach to differential calculus and an introduction to integral calculus. Topics include functions, graphs, the derivative, applications of the derivative, maxima and minima, velocity and acceleration, rates of change, antidifferentiation, the fundamental theorem of calculus, and basic integration techniques. Prerequisite: MATH 1113

MATH 2111 Calculus II 4 Credit Hours  
A continuation of MATH 2101. Topics include logarithmic, exponential, and other transcendental functions, applications of integration, integration techniques. L'Hopital's rule, improper integrals, and infinite series. Prerequisite: MATH 2101

MATH 3101 Linear Algebra 3 Credit Hours  
Topics include matrix algebra, solutions of linear systems, vectors and vector spaces, linear independence, spanning sets, bases, ranks, determinants, matrix inversion, linear transformations, null space, range, and eigenvalues. Prerequisite: MATH 2111

MATH 3301 Differential Equations 4 Credit Hours  
Topics include differential equations of the first order and first degree, linear equations, variation of parameters, method of undetermined coefficients, inverse operators, Laplace transforms, systems of differential equations, and applications. Prerequisite: MATH 2111

MATH 3501 Numerical Analysis 3 Credit Hours  
Topics include solving of linear equations, Gauss-Seidel and Jacobi methods, error analysis, approximating functions by infinite series, iteration techniques, techniques of integration, to include trapezoidal and Simpson's rules. Prerequisites: MATH 2111 and CSCI 1302

MATH 3602 Linear & Discrete Mathematics 4 Credit Hours  
Basics of sequences and rates of growth, counting methods, graph theory and graph algorithms, linear algebra, linear programming, and combinatorial optimization.

PHYS 2211K Principle of Physics I 4 Credit Hours  
An introductory course, which includes material from mechanics, thermodynamics, and waves. Elementary differential calculus is used. Prerequisite: MATH 2101 or MATH 2501

PHYS 2212K Principle of Physics II 4 Credit Hours  
An introductory course, which includes material from electromagnetism, optics, and modern physics. Elementary differential and integral calculus are examined. Prerequisite: PHYS 2211K

#### Newly Developed Courses

ENGR 3110K Creative Decisions & Design I 3 Credit Hours  
To learn fundamental techniques for creating, analyzing, synthesizing, and implementing design solutions to open ended problems with flexibility, adaptability, and creativity through team and individual efforts. Prerequisites: ENGR 2770 and CSCI 1371

ENGR 4110K Creative Decisions & Design II 5 Credit Hours  
To learn fundamental techniques for creating, analyzing, synthesizing, and implementing design solutions to open ended problems with flexibility, adaptability, and creativity through team and individual efforts. Prerequisites: ENGR 3110K

# **Appendix B – Accreditation Standards**

# CRITERIA FOR ACCREDITING ENGINEERING PROGRAMS

Effective for Evaluations During the  
2010-2011 Accreditation Cycle

Incorporates all changes  
approved by the  
ABET  
Board of Directors  
as of  
October 31, 2009



Engineering Accreditation Commission

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## Criteria for Accrediting Engineering Programs Effective for Evaluations during the 2010-2011 Accreditation Cycle

### Definitions

(From Section II.D.1. of the ABET *Accreditation Policy and Procedure Manual*)

While ABET recognizes and supports the prerogative of institutions to use and adopt the terminology of their choice, it is necessary for ABET volunteers and staff to have a consistent understanding of terminology. With that purpose in mind, the Commissions will use the following basic definitions:

Program Educational Objectives – Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing the graduates to achieve.

Program Outcomes – Program outcomes are narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.

Assessment – Assessment is one or more processes that identify, collect, and prepare data to evaluate the achievement of program outcomes and program educational objectives.

Evaluation – Evaluation is one or more processes for interpreting the data and evidence accumulated through assessment practices. Evaluation determines the extent to which program outcomes or program educational objectives are being achieved and results in decisions and actions to improve the program.

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These criteria are intended to assure quality and to foster the systematic pursuit of improvement in the quality of engineering education that satisfies the needs of constituencies in a dynamic and competitive environment. It is the responsibility of the program seeking accreditation to demonstrate clearly that the program meets the following criteria.

### I. GENERAL CRITERIA FOR BACCALAUREATE LEVEL PROGRAMS

#### Criterion 1. Students

The program must evaluate student performance, advise students regarding curricular and career matters, and monitor student's progress to foster their success in achieving program outcomes, thereby enabling them as graduates to attain program objectives.

The program must have and enforce policies for the acceptance of transfer students and for the validation of courses taken for credit elsewhere. The program must also have and enforce procedures to assure that all students meet all program requirements.

#### Criterion 2. Program Educational Objectives

Each program for which an institution seeks accreditation or reaccreditation must have in place:

- (a) published educational objectives that are consistent with the mission of the institution and these criteria
- (b) a process that periodically documents and demonstrates that the objectives are based on the needs of the program's various constituencies
- (c) an assessment and evaluation process that periodically documents and demonstrates the degree to which these objectives are attained.



**Criterion 3. Program Outcomes**

Engineering programs must demonstrate that their students attain the following outcomes:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) an ability to function on multidisciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program outcomes are outcomes (a) through (k) plus any additional outcomes that may be articulated by the program. Program outcomes must foster attainment of program educational objectives.

There must be an assessment and evaluation process that periodically documents and demonstrates the degree to which the program outcomes are attained.

**Criterion 4. Continuous Improvement**

Each program must show evidence of actions to improve the program. These actions should be based on available information, such as results from Criteria 2 and 3 processes.

**Criterion 5. Curriculum**

The curriculum requirements specify subject areas appropriate to engineering but do not prescribe specific courses. The faculty must ensure that the program curriculum devotes adequate attention and time to each component, consistent with the outcomes and objectives of the program and institution. The professional component must include:

- (a) one year of a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline
- (b) one and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study. The engineering sciences have their roots in mathematics and basic sciences but carry knowledge further toward creative application. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other. Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs.

- (c) a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

Students must be prepared for engineering practice through a curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints.

#### **Criterion 6. Faculty**

The faculty must be of sufficient number and must have the competencies to cover all of the curricular areas of the program. There must be sufficient faculty to accommodate adequate levels of student-faculty interaction, student advising and counseling, university service activities, professional development, and interactions with industrial and professional practitioners, as well as employers of students.

The program faculty must have appropriate qualifications and must have and demonstrate sufficient authority to ensure the proper guidance of the program and to develop and implement processes for the evaluation, assessment, and continuing improvement of the program, its educational objectives and outcomes. The overall competence of the faculty may be judged by such factors as education, diversity of backgrounds, engineering experience, teaching effectiveness and experience, ability to communicate, enthusiasm for developing more effective programs, level of scholarship, participation in professional societies, and licensure as Professional Engineers.

#### **Criterion 7. Facilities**

Classrooms, laboratories, and associated equipment must be adequate to safely accomplish the program objectives and provide an atmosphere conducive to learning. Appropriate facilities must be available to foster faculty-student interaction and to create a climate that encourages professional development and professional activities. Programs must provide opportunities for students to learn the use of modern engineering tools. Computing and information infrastructures must be in place to support the scholarly activities of the students and faculty and the educational objectives of the program and institution.

#### **Criterion 8. Support**

Institutional support, financial resources, and constructive leadership must be adequate to assure the quality and continuity of the program. Resources must be sufficient to attract, retain, and provide for the continued professional development of a well-qualified faculty. Resources also must be sufficient to acquire, maintain, and operate facilities and equipment appropriate for the program. In addition, support personnel and institutional services must be adequate to meet program needs.

#### **Criterion 9. Program Criteria**

Each program must satisfy applicable Program Criteria (if any). Program Criteria provide the specificity needed for interpretation of the baccalaureate level criteria as applicable to a given discipline. Requirements stipulated in the Program Criteria are limited to the areas of curricular topics and faculty qualifications. If a program, by virtue of its title, becomes subject to two or more sets of Program Criteria, then that program must satisfy each set of Program Criteria; however, overlapping requirements need to be satisfied only once.

**II. GENERAL CRITERIA FOR MASTERS LEVEL PROGRAMS**

Masters level programs must develop, publish, and periodically review, educational objectives and program outcomes. The criteria for masters level programs are fulfillment of the baccalaureate level general criteria, fulfillment of program criteria appropriate to the masters level specialization area, and one academic year of study beyond the baccalaureate level. The program must demonstrate that graduates have an ability to apply masters level knowledge in a specialized area of engineering related to the program area.

## 2. Faculty

The program must demonstrate that the majority of faculty teaching courses that are primarily design in content are qualified to teach the subject matter by virtue of professional licensure, or by education and design experience. The faculty must include at least one member who has had full-time experience and decision-making responsibilities in the construction industry.

PROGRAM CRITERIA FOR  
ELECTRICAL, COMPUTER,  
AND SIMILARLY NAMED ENGINEERING PROGRAMS  
Lead Society: Institute of Electrical and Electronics Engineers  
Cooperating Society for Computer Engineering Programs: CSAB

These program criteria apply to engineering programs that include electrical, electronic, computer, or similar modifiers in their titles.

### 1. Curriculum

The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program.

The program must demonstrate that graduates have: knowledge of probability and statistics, including applications appropriate to the program name and objectives; and knowledge of mathematics through differential and integral calculus, basic sciences, computer science, and engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components, as appropriate to program objectives.

Programs containing the modifier "electrical" in the title must also demonstrate that graduates have a knowledge of advanced mathematics, typically including differential equations, linear algebra, complex variables, and discrete mathematics.

Programs containing the modifier "computer" in the title must also demonstrate that graduates have a knowledge of discrete mathematics.

PROGRAM CRITERIA FOR  
ENGINEERING, GENERAL ENGINEERING,  
ENGINEERING PHYSICS, AND ENGINEERING SCIENCE  
AND SIMILARLY NAMED ENGINEERING PROGRAMS  
Lead Society: American Society for Engineering Education

These program criteria apply to engineering (without modifiers), general engineering, engineering physics, engineering science(s), and similarly named engineering programs.

There are no program-specific criteria beyond the General Criteria.

PROGRAM CRITERIA FOR  
ENGINEERING MANAGEMENT  
AND SIMILARLY NAMED ENGINEERING PROGRAMS

Lead Society: Institute of Industrial Engineers

Cooperating Societies: American Institute of Chemical Engineers, American Society of Civil Engineers,  
American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers,  
Society of Manufacturing Engineers, and Society of Petroleum Engineers

These program criteria apply to engineering programs using management or similar modifiers in their titles.

1. Curriculum

The program must demonstrate that graduates have: an understanding of the engineering relationships between the management tasks of planning, organization, leadership, control, and the human element in production, research, and service organizations; an understanding of and dealing with the stochastic nature of management systems. They must also be capable of demonstrating the integration of management systems into a series of different technological environments.

2. Faculty

The major professional competence of the faculty must be in engineering, and the faculty should be experienced in the management of engineering and/or technical activities.

PROGRAM CRITERIA FOR  
ENGINEERING MECHANICS  
AND SIMILARLY NAMED ENGINEERING PROGRAMS

Lead Society: American Society of Mechanical Engineers

These program criteria apply to engineering programs which include mechanics or similar modifiers in their titles.

1. Curriculum

The program must demonstrate that graduates have the ability to use mathematical and computational techniques to analyze, model, and design physical systems consisting of solid and fluid components under steady state and transient conditions.

2. Faculty

The program must demonstrate that faculty members responsible for the upper-level professional program are maintaining currency in their specialty area.

# **Appendix C – Faculty Credentials**

**Dr. Spyros Andreou**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 358-3276  
Email: andreous@savannahstate.edu

## **Education**

MS, University of Arkansas, 1996.  
Major: Applied Mathematics

Ph D, University of Arkansas, 1995.  
Major: Electrical Engineering  
Supporting Areas of Emphasis: Control Theory  
Dissertation Title: Control and Estimation of Uncertain Dynamic Systems Described by Difference Inclusions

MS, University of Arizona, 1990.  
Major: Electrical Engineering  
Supporting Areas of Emphasis: Control Theory

BS, University of Arizona, 1987.  
Major: Electrical Engineering

## **Professional Positions**

### **Academic - Post-Secondary**

Assistant Professor, Savannah State University. (August 6, 2006 - Present).

Assistant Professor, Georgia Southern University. (January 1, 2003 - July 31, 2006).

## **Licensures and Certifications**

Professional Engineers (PE), State of New Mexico (Georgia). (February 16, 1999 - December 31, 2010).

## **Professional Memberships**

Senior Member, Institute of Electrical and Electronics Engineers.

Member, Member of the Institution of Engineering Technology.

## **Development Activities Attended**

Workshop, "2010 Fall Institute," SSU. (August 5, 2010 - August 6, 2010).

Workshop, "Information Literacy," SSU Library. (July 9, 2010 - July 10, 2010).

Workshop, "Distributed Engineering and Technology Education," MSEIP. (May 1, 2010).

Seminar, "Obesity, and the Plot Thickens," RIMI. (April 20, 2010).

Workshop, "Utilizing Existing Campus Resources to Support the QEP.," QEP. (April 20, 2010).

Conference Attendance, "PSLSAMP 2009," Alliance National Conference. (November 13, 2009 - November 15, 2009).

Workshop, "Advising and Mentoring," BEEM and STEM 360 projects. (September 26, 2009).

Conference Attendance, "IEEE SoutheastCon 2009," IEEE. (March 5, 2009 - March 8, 2009).

### **Awards and Honors**

Senior Member, IEEE. (June 15, 2000).

## **TEACHING**

### **Teaching Experience**

#### **Savannah State University**

1101, Introduction to Engineering, 1 course.

1371, Computing for Engineers and Scientists, 2 courses.

2030, Introduction to Computer Engineering, 2 courses.

2201, Statics for Engineers, 1 course.

2521, Calculus III for Engineers, 1 course.

3602, Linear and Discrete Mathematics, 1 course.

CSCI 1371, Computing for Engineers & Scientists, 1 course.

ENGR 1101, Introduction to Engineering, 1 course.

ENGR 2030, Introduction to Computer Engineering, 1 course.

ENGR 2040, Circuit Analysis, 1 course.

### **Non-Credit Instruction**

UPWARD BOUND INSTRUCTOR, SUMMER 2010, Department of Education, 40 participants. (June 28, 2010 - July 29, 2010).

Workshop, BEEM Project, 15 participants. (September 19, 2009).



## Directed Student Learning

Other, "Exploring the number e," Other (Within Savannah State University). (May 20, 2009 - July 10, 2009).

Advised: Brittany Lewis

Other, "Computing of Easter Sunday by Java Programming," Other (Within Savannah State University). (June 1, 2007 - July 20, 2007).

Advised: Alvita Williams

## RESEARCH

### Published Intellectual Contributions

#### Refereed Journal Articles

Murti, K., Andreou, S. (2004). Qualitative Properties of General First Order Matrix Difference Systems. *Nonlinear Studies*.

#### Conference Proceedings

Davies, G., Andreou, S. (2010). *A Matrix Approach to Plotting 2nd Order Differential Equations Using LSIM and ODE 23 MATLAB Functions..* Athens, Georgia: 2010 Peach State LSAMP Alliance National Conference at Athens, Georgia..

Simmons, M., Andreou, S. (2010). *Boolean Algebra & If Statements: Tic-Tac-Toe Game (C#)*. Athens, Georgia: 2010 Peach State LSAMP Alliance National Conference at Athens, Georgia..

Andreou, S., B. L. (2009). *'Exploring the number e'*. Washington DC: HBCU -UP 2009 National Conference.

Andreou, S., K. M. (2009). *"Controllability and Stability of Matrix Difference Systems"*. Atlanta, Georgia: IEEE SoutheastCon 2009.

Andreou, S., Yaz, E. (2000). *Ellipsoidal Set Theory on Continuous-Time Systems*. Hawaii: World Automation Congress 2000.

Andreou, S., Yaz, E. (1999). *Reduced Order Estimation of Power System Harmonics Using Ellipsoidal Set Theory*. Hawaii: CCA/CACSD.

Andreou, S., Yaz, E. (1998). *Harmonic Estimation in Power Systems using Ellipsoidal Set Theory*. Trieste, Italy: Conference on Control Applications (CCA).

Zrilic, D., Kosmatopoulos, E., Andreou, S. (1998). *One Approach for Robust Fuzzy Control*. Anchorage, Alaska: World Automation Congress 1998.

Esquibel, A., Andreou, S., Ramirez, J. (1998). *Building Blocks of Linear and Nonlinear Circuits Based on Operational Transconductance Amplifiers*. Huntsville, Alabama: NASA.

Andreou, S., Yaz, E. (1996). *On the Output Feedback Control of Discrete-Time Uncertain Systems*. Baton Rouge, Louisiana: The 28th Annual IEEE Southeastern Symposium on System Theory.

### **Journal Articles**

Hamilton, K., Andreou, S. (2004). The Effects of Technological Advancements on Ethical Principles. *Ronald E. McNair Scholars Journal*.

### **Presentations Given**

Andreou, S. (Co-Chair), Lambright, J. (Chair), Counselor/Teacher Workshop 2009, "Engineering as a Career," BEEM project/SSU, Savannah. (September 19, 2009).

### **Media Contributions**

#### **Newspaper**

The Savannah Morning News. (October 15, 2009).

### **Contracts, Grants and Sponsored Research**

#### **Grant**

Andreou, Spyros (Co-Principal), Lambright, Jonathan (Principal), Awan, Ijaz (Supporting), "Business Engineering Education Model," Sponsored by NSF, Federal.

### **Research in Progress**

"A Matrix Approach to Plotting 2nd Order Differential Equations Using LSIM and ODE23 MATLAB Functions" (Writing Results)

In this research endeavor we first converted a differential equation into a matrix form in order to satisfy the requirements for the functions being used in MATLAB. A second order differential equation is converted into two first order differential equations. This method requires little knowledge of Linear Algebra but gives you a lot of information regarding the system such as stability, physical properties and an insight of its behavior after some time giving the designer the opportunity to design other parts for the system such as controllers or observers. The classical methods such as Laplace Transforms will not provide all these information. Our case study is a

circuit with two energy stored elements (capacitor or inductor) to fully observe the results of the circuit's second order governing differential equation in either output voltage or current terms. LSIM is a function of MATLAB used to simulate time response of LTI (Linear Time Invariant) models to arbitrary inputs. LSIM plots the time response of the LTI model SYS (System – circuit in our case) to the input signal described by U (input) and T (time). ODE23 is a function of MATLAB used to solve non-stiff differential equations in the first and second order.

#### "Boolean Algebra & If Statements: Tic-Tac-Toe Game (C#)" (Writing Results)

Tic-Tac-Toe is a fairly simple game that has been around for centuries and will probably never be forgotten. It is usually a pencil game for two players who take turns marking the spaces on a 3 x 3 grid. When put into a computer program the game becomes a complex language coding process. The process involves strenuous problems of how to connect the 3 x 3 grid and make the program correspond with the rules of the Tic-Tac-Toe game. In this research project we used c-sharp programming language to create a Tic-Tac-Toe game. C-sharp is a high level programming language that is very versatile and similar to Java, Visual Basic and C++. The program will perform the procedures of the Tic-Tac-Toe game in real time. Player one picks "x" and the other "o" and if there is no winner the game ends in a draw. The program is coded using a complex design of IF statements and Boolean Algebra. The form in the program is a 3 x 3 board with a restart button. The end result of the computer program is to play against another player and strategize a way to win or draw.

## **SERVICE**

### **Department Service**

Committee Member, Grade Appeal Committee. (May 19, 2010 - June 21, 2010).

Committee Chair, Grade Appeal Committee. (February 1, 2010 - March 1, 2010).

Committee Chair, Grade Appeal Committee. (February 1, 2009 - March 1, 2009).

### **College Service**

Committee Member, PRISM Internal Advisory Committee. (May 12, 2010 - December 12, 2010).

Committee Member, ADHOC Committee- Post Tenure Review Policy Development. (November 11, 2009 - February 17, 2010).

### **University Service**

Committee Member, Faculty Senate. (August 5, 2010 - May 10, 2012).

Committee Member, Fall 2009 Faculty Institute. (May 20, 2009 - July 25, 2009).

Committee Member, Scholarship Committee. (June 25, 2008 - July 25, 2008).

### **Awards and Honors**

#### **Service, Professional**

Registered as a Professional Engineer (PE), State of New Mexico. (February 16, 1999).

**Professor Abida I. Awan**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 358-3273  
Email: awana@savannahstate.edu

## **Education**

MS, Southwest University, 2002.  
Major: Computer Science  
Supporting Areas of Emphasis: Software and hardware

MA, University of Punjab, 1973.  
Major: Economics  
Supporting Areas of Emphasis: Statistics

BS, University of Punjab.  
Major: Physics & Chemistry  
Supporting Areas of Emphasis: Physics, Chemistry, & Math

## **Licensures and Certifications**

Certified Online Instructor, Savannah State University. (August 5, 2010 - Present).

Windows Server 2003, Learning Tree International. (July 2001 - Present).

## **Professional Memberships**

Science Fair Judge, •Member of Savannah Ogeechee Regional Science & Engineering Fair (SOREF). (March 2008 - Present).

Member, HBCU National Association of African-American Studies(NAAAS). (March 2001 - Present).

## **Development Activities Attended**

Workshop, "Apple Aperture Training," Invision Digital and Media Arts Inc.. (July 20, 2010 - Present).

US Department of Education, "Graduate Assistance in the Area of National Need. (GAANN)," Dept of Education. (January 2007 - Present).

Workshop, "iPhone Under the Hood workshop," SSU. (March 2, 2010).

Conference Attendance, "INFOSEC World 2008 Conference, Expo," INFOSEC. (March 8, 2008 - March 12, 2008).

Workshop, "The Digital Revolution and beyond in Wi-Fi.," IMPACT. (July 25, 2007 - July 26, 2007).

Conference Attendance, "HPCNS-2007," HPCNS. (July 7, 2007 - July 12, 2007).

Workshop, "SUSE Linux Installation/configuration Ver.10," Novell-SuSe Linux Company. (September 12, 2006).

Conference Attendance, "National Education Computing Conference 2006," NECC. (July 2006).

## **TEACHING**

### **Teaching Experience**

#### **Savannah State University**

CSCI 1130, Computer & its Applications, 22 courses.

### **Non-Credit Instruction**

Review Course, MAGEC-STEM CSC Courses, 22 participants. (June 2004 - July 2006).

## **RESEARCH**

### **Published Intellectual Contributions**

#### **Other**

Awan, A. *Microsoft Office 2007 -Timothy and Linda O'Leary (Book Review)*. McGrawhill Publishers.

Awan, A. *Microsoft Office 2007 Brief.Timothy and Linda O'Leary (Book Review)*. McGrawhill Publishers.

Awan, A. *Microsoft Office Access 2007 Brief -Timothy and Linda O'Leary(Book Review)*. McGrawhill Publishers.

Awan, A. *Microsoft Office Access 2007 -Timothy and Linda O'Leary (Book Review)*. McGrawhill Publishers.

Awan, A. *Microsoft Office Excel 2007 Brief-Timothy and Linda O'Leary*. McGrawhill Publishers.

Awan, A. *Microsoft Office Excel 2007 -Timothy and Linda O'Leary (Book Review)*. McGrawhill Publishers.

Awan, A. *Microsoft Office PowerPoint 2007 Brief*. Timothy and Linda O'Leary. McGrawhill Publishers.

Awan, A. *Microsoft Office Word 2007*-Timothy and Linda O'Leary (Book Review). McGrawhill Publishers.

### **Presentations Given**

Awan, A. (Author & Presenter), Annual Conference 1999, "Using Wireless Technology on Campuses," NADE, Detroit.

Awan, A. (Presenter), National Association of African American Studies, "Network Firewalls to defend Wireless Security Attacks," NAAAS, Orlando. (February 2007).

## **SERVICE**

### **Department Service**

Committee Member, Post and Pre-Tenure. (January 2010 - May 2010).

Committee Member, COST Personnel Committee. (February 2009 - March 2010).

### **University Service**

Committee Member, Grievance. (June 12, 2009 - July 15, 2009).

Committee Member, ADR. (August 12, 2005 - June 14, 2007).

### **Consulting**

Academic, DOE/EPA, SSU. (June 15, 2010 - Present).

### **Awards and Honors**

#### **Service, Professional**

PSLSAMP Conference Panel Discussion, PSLAMP SSU grant. (November 13, 2008).

**Professor Ijaz A. Awan**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 358-3268  
Email: awani@savannahstate.edu

## **Education**

MS, Alabama A&M University, 1984.  
Major: Computer Science

MA, Punjab University.  
Major: Economics

## **Professional Positions**

### **Professional**

Title III, Activity Director Podcasting in Education Technology Integration, Savannah State University. (August 2009 - September 2010).

Database Administrator, Savannah State University. (August 2009 - May 2010).

Title III, Activity Director Technology Integration, Savannah State University. (August 2008 - September 2009).

Title III, Activity Director Wireless Technology, Savannah State University. (August 2006 - September 2007).

Title III, Activity Director Campus-wide Digital Technology, Savannah State University. (October 2004 - September 2006).

Title III, Activity Director Campus-wide Fiber Optic, Savannah State University. (August 2001 - September 2004).

## **Licensures and Certifications**

Certified Online Instructor, Savannah State University. (August 2010 - Present).

Unix Systems Professional, Learning Tree International. (August 1997 - Present).

## **Development Activities Attended**

Workshop, "Apple Apperture," Apple Computers. (July 2010 - Present).

Workshop, "Final Cut Pro Ver 7," Computer Tree. (July 2010 - Present).



Workshop, "MacOS X 201 Server Essentials V10.6," Apple Authorized Training. (December 14, 2009 - December 18, 2009).

Workshop, "Technology Workshops," Learning Tree International. (August 2006 - September 2009).

Workshop, "MacSvc2300-Apple Hardware Service Certification Course," CAERIAN-Apple Authorized Trainer. (July 21, 2009 - July 24, 2009).

Workshop, "Final Cut Professional Training," genius- Apple Authorized Trainers. (March 15, 2009 - March 20, 2009).

Workshop, "Oracle Database 10g: A Comprehensive Hands-on Introduction," Learning Tree International. (May 5, 2008 - May 9, 2008).

Workshop, "Hands-On Windows Server 2003," Learning Tree International. (July 24, 2006 - July 28, 2006).

Workshop, "Hands-On Java Programming," Learning Tree International. (March 14, 2006 - March 17, 2006).

Workshop, "Developing a Website: Hands-On," Learning Tree International. (August 2, 2005 - August 5, 2005).

Workshop, "Windows Server 2003 Active Directory Planning and Migration," Learning Tree International. (July 25, 2005 - July 29, 2005).

## **TEACHING**

### **Teaching Experience**

#### **Savannah State University**

CSCI 1130, Computer & Its Applications, 1 course.

CSCI 1301, Computer Science I, 1 course.

## **RESEARCH**

### **Published Intellectual Contributions**

#### **Other**

Awan, I. (2010). In Cengage- Course Technology (Ed.), *MS Visual C# 2008:An Object Oriented Programming 4e* by Joyce Farrell.

Awan, I. (2008). *Introduction to Programming with JAVA* by John Dean.

Awan, I. (2008). In Addison-Wesley Computing (Ed.), *Starting Out with C++ by Tony Gaddis 6th Edition*.

Awan, I. (2003). *Practical Perl with CGI Applications by Chang*.

Awan, I. (2001). In Thompson Learning Incorporation (Ed.), *CWNA Guide to Designing and Implementing Wireless LANS* (pp. 35). Massachusetts: Course Technology.  
www.course.com

### **Presentations Given**

Awan, I., Digital Measures, "Faculty Training using Digital Measures," Savannah State University, Savannah. (March 2010).

Awan, I., Title III Technology Integration, "Podcasting in Education," Title III SSU, Savannah. (January 2010).

### **Contracts, Grants and Sponsored Research**

#### **Grant**

Andreou, Spyros (Co-Principal), Lambright, Jonathan (Principal), Awan, Ijaz (Supporting), "Business Engineering Education Model," Sponsored by NSF, Federal.

Awan, Ijaz, "MAGEC STEM," Sponsored by NSF, Federal. (June 2005 - July 2010).

### **SERVICE**

#### **Department Service**

Program Coordinator, Computer Science Technology Coordinator. (August 1984 - Present).

#### **College Service**

Committee Chair, Faculty Handbook. (October 2009 - March 2010).

#### **University Service**

Committee Member, Faculty Affairs. (August 2008 - Present).

Committee Member, Computer Utilization Technology. (August 2006 - Present).

Committee Chair, SACS Campus Technology. (September 2008 - December 2009).

## **Consulting**

Academic, College of Sciences and Technology, Savannah. (January 2007 - Present).

## **Awards and Honors**

### **Service, University**

Distinguished Activity Director, Title III Office. (March 12, 2004).

**Professor Sylvester A. Chukwukere**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 356-2154  
Email: chukwuks@savannahstate.edu

## **Education**

MS, Tuskegee University, 1984.  
Major: Electrical Engineering

BS, Southern University, 1981.  
Major: Electrical Engineering

National Diploma, Institute of Management and Technology, 1974.  
Major: Electrical/Electronics

## **Professional Memberships**

None, American society of Engineering Education.

Institute of Electrical and Electronics Engineers.

## **Development Activities Attended**

Monthly Meeting of the IEEE. Savannah Chapter., IEEE.

Conference Attendance, "Conference on Alternative Energy Technology Inovations,"  
ASEE( American Association of Engineering Education). (May 12, 2005 - May 13,  
2005).

Conference Attendance, "Annual ASSE Conference for Industry and Education  
Collaboration," ASSE( American Association of Engineering Education). (February  
5, 2002 - February 8, 2002).

Conference Attendance, "Annual Southeastern Section Conference," ASSE (American  
Assocation of Engineering Education). (April 13, 1997 - April 15, 1997).

## **TEACHING**

### **Teaching Experience**

#### **Savannah State University**

ELET 3101, Electric Circuit, 2 courses.

ELET 3111, Electric Circuit 2, 1 course.

ELET 3211, Electronics 2, 1 course.

## **Awards and Honors**

Certificate Award (renewable energy workshop), NASA/University of central Florida.  
(March 20, 1996).

## **RESEARCH**

### **Presentations Given**

Chukwukere, S., North Centrak Sectio Annual Meeting of Engineering Education,  
"Improving the Quality of Engineering Technology Instruction, Using Pareto  
Technique," ASEE.

## **SERVICE**

### **Department Service**

Cordinator of the committee, Industrial Advisory Committee for EET program.

Committee Member, Internal Advisory Committee on Targeted Infusion Program.  
(September 15, 2009 - Present).

### **College Service**

Committee Member, Post-tenure committee.

### **University Service**

Committee Member, University Senate. (August 15, 2007 - Present).

### **Public Service**

A judge at science fair, Savannah arts academy, Savannah, Georgia.

## **Awards and Honors**

### **Service, University**

Appreciation, National Society of Black engineers. (April 15, 1992).

**Mr. Alberto G. De La Cruz**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 358-4267  
Email: delacruz@savannahstate.edu

## **Education**

MS, Nova Southeastern University, 2009.  
Major: Information Technology  
Supporting Areas of Emphasis: Software Development

BA, Felician College, 2002.  
Major: Computer Science  
Supporting Areas of Emphasis: Computer Programming

## **Professional Positions**

### **Military**

SPC, US Army. (January 1, 2003 - May 9, 2005).

### **Professional**

Laboratory Instructor, Savannah State University. (July 27, 2007 - Present).

Associate Analyst, Convergys Corporation. (March 23, 2007 - July 21, 2007).

Student Lab Support, Savannah State University. (November 1, 2005 - March 1, 2007).

## **Professional Memberships**

Association for Computing Machinery.

Institute of Electrical and Electronics Engineers.

## **Development Activities Attended**

Conference Attendance, "CISCO ACADEMY CONFERENCE," CISCO. (June 28, 2010 - June 30, 2010).

Workshop, "CISCO CCNA," CISCO ACADEMY. (June 21, 2010 - June 25, 2010).

Conference Attendance, "ASEE Annual Conference and Expo." (June 15, 2009 - June 17, 2009).

Workshop, "Matlab Fundamentals," MathWorks Inc.. (May 18, 2009 - May 21, 2009).

## **TEACHING**

### **Teaching Experience**

#### **Savannah State University**

CSCI 1130, Computer and its Applications, 1 course.

**Dr. Derrek B. Dunn**  
Savannah State University  
Dean  
(912) 356-2349  
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## **Education**

- Ph D, Virginia Polytechnic Institute and State University, 1998.  
Major: Electrical Engineering  
Dissertation Title: REAL-TIME IMAGE PROCESSING USING ACOUSTO-OPTIC BRAGG DIFFRACTION
- MS, Virginia Polytechnic Institute and State University, 1995.  
Major: Mathematics
- MS, Virginia Polytechnic Institute and State University, 1993.  
Major: Electrical Engineering
- BS, North Carolina Agricultural and Technical State University, 1990.  
Major: Electrical Engineering
- BS, North Carolina Agricultural and Technical State University, 1989.  
Major: Mathematics

## **Professional Positions**

### **Academic - Post-Secondary**

- Professor, Savannah State University. (August 1, 2009 - Present).
- Professor, North Carolina Agricultural and Technical State University. (July 2005 - May 2009).
- Associate Professor, North Carolina Agricultural and Technical State University. (July 2002 - June 2005).
- Assistant Professor, North Carolina Agricultural and Technical State University. (August 1998 - June 2002).
- Assistant Professor, Tuskegee University. (August 1997 - May 1998).

## **Licensures and Certifications**

- Certified Technology Manager (CTM), The Association of Technology, Management, and Applied Engineering (ATMAE)..



Engineer Class I Certification with Master Endorsement (RF), International Association of Radio and Telecommunication Engineers (iNARTE).

Engineer-in-Training (E.I.T.), State of Virginia..

### **Professional Memberships**

National Association of Power Engineers. (2007 - Present).

International Association of Radio and Telecommunication Engineers. (2000 - Present).

American Society for Engineering Education. (1999 - Present).

The Association of Technology, Management, and Applied Engineering (ATMAE).  
(1998 - Present).

•Institute of Electrical and Electronics Engineers (IEEE). (1998 - Present).

## **TEACHING**

### **Teaching Experience**

#### **Savannah State University**

1103, Freshman Year Experience, 1 course.

MATH 1111, College Algebra, 1 course.

## **RESEARCH**

### **Published Intellectual Contributions**

#### **Books**

Brown, D., Dunn, D. (2008). *Fundamental Mathematics for Electronics and Information Technology*. Ann Arbor, MI: Copley Custom Textbooks.

### **Research in Progress**

"Building a joint physics program with University of Georgia" (On-Going)

**Dr. Chris J. Hintz**  
Savannah State University  
Natural Sciences  
(912) 351-3589  
Email: hintzc@savannahstate.edu

## **Education**

Ph D, University of South Carolina, 2004.

Major: Marine Sciences

Supporting Areas of Emphasis: Marine Chemistry, Paleoceanography and Climate Change

Dissertation Title: Foraminiferal Biomineralization: Culture Experiments on Trace/Minor Element Uptake, Ontogenetic, and Calcification Rate Effects

MS, Rose-Hulman Institute of Technology, 1998.

Major: Chemical Engineering

Supporting Areas of Emphasis: Environmental Engineering

Dissertation Title: Algal Turf Scrubber Nitrogen Remediation

BS, Rose-Hulman Institute of Technology, 1995.

Major: Chemical Engineering

## **Professional Positions**

### **Academic - Post-Secondary**

Assistant Professor, Savannah State University. (March 2009 - Present).

Assistant Research Professor, University of South Carolina. (November 2005 - February 2009).

Postdoctoral Researcher, University of South Carolina. (May 2004 - November 2005).

### **Government**

Air Pollution Engineer, Virginia Department of Environmental Quality. (November 1997 - September 1998).

## **Licensures and Certifications**

Scientific Diver, AAUS. (August 2006 - Present).

Advanced Open Water, PADI. (December 2002 - Present).

Nitrox, SSI. (December 2002 - Present).

Open Water Diver, PADI. (April 2001 - Present).

Open Water Diver, YMCA. (February 1988 - Present).

### **Professional Memberships**

American Geophysical Union. (November 2002 - Present).

Geology Society of America. (October 2004 - September 2005).

Society for Environmental Toxicology and Chemistry. (November 2000 - October 2003).

### **Development Activities Attended**

Conference Attendance, "Ocean Sciences Meeting," American Society of Limnology and Oceanography. (March 2008).

Workshop, "Ocean Acidification Workshop," National Science Foundation. (October 2007).

## **TEACHING**

### **Teaching Experience**

#### **Savannah State University**

MSCI 2010, Introduction to Oceanography, 1 course.

MSCI 3301, Marine Environmental Chemical Analysis, 1 course.

MSCI 4901, Marine Science Senior Seminar, 1 course.

MSCI 4902, Marine Science Research/Internship, 1 course.

MSCI 4903, Marine Science Research/Internship, 1 course.

MSCI 5201, General Oceanography, 2 courses.

MSCI 5402, Marine Science Seminar, 1 course.

### **Directed Student Learning**

Internship Advisor, "Marine Algae Population and Diversity Changes from Municipal Wastewater Amendments," Other (Within Savannah State University). (May 2010 - Present).

Advised: Amara Jones

Internship Advisor, "Assessment of Commercial Shrimp Populations (Savannah, GA) Suffering from the Respiratory Infection "Black Gill"," Other (Within Savannah State University). (May 2010 - Present).

Advised: Jesse Weitman

Dissertation Committee Chair, "Marine Algae Cultivation for Biofuels Production,"  
Other (Within Savannah State University). (August 2009 - Present).  
Advised: Amber Wilkinson

Master's Thesis Committee Member, "Pathogen Brucella in Bottlenose Dolphin," Other  
(Within Savannah State University). (May 2009 - Present).  
Advised: Kelli Edwards

Supervised Research, Other (Outside Savannah State University). (December 2008 - May  
2010).  
Advised: Brianna Tracy

Master's Thesis Committee Member, Other (Outside Savannah State University). (August  
2004 - December 2007).  
Advised: Jessica Blanks

Undergraduate Honors Thesis, "Cadmium Contamination altering limb regeneration,"  
Other (Outside Savannah State University). (August 2006 - May 2007).  
Advised: Katrina Phillips

Undergraduate Honors Thesis, "Foraminifera preservation from different sediment fixing  
agents," Other (Outside Savannah State University). (August 2006 - May 2007).  
Advised: Kristie Etson

## RESEARCH

### Published Intellectual Contributions

#### Book Chapters

McCorkle, D. C., Bernhard, J. M., Hintz, C., e. a. (2008). *The carbon and oxygen stable isotopic composition of cultured benthic foraminifera..* Geological Society of London, Special Volume Series: Biogeochemical Controls on Palaeoceanographic Climate Proxies..

#### Refereed Journal Articles

Hintz, C., Shaw, T. J., Berhard, J. M., e. a. (2006). Trace/Minor element:calcium ratios in cultured benthic foraminifera. Part II: Ontogenetic variation.. *Geochimica Cosmochimica Acta*, 70, 1964-1976.

Hintz, C., Shaw, T. J., Chandler, G. T., e. a. (2006). Trace/Minor element:calcium ratios in cultured benthic foraminifera. Part I: Interindividual and interspecies variation.. *Geochimica Cosmochimica Acta*, 70, 1952-1963.

Hintz, C., Chandler, G. T., Bernhard, J. M., e. a. (2004). A physicochemically-constrained seawater culturing system for production of benthic foraminifera.. *Limnology and Oceanography: Methods*, 2, 160-170.

Bernhard, J. M., Blanks, J. K., Hintz, C., e. a. (2004). Use of the fluorescent calcite marker calcein to label foraminiferal tests.. *Journal of Foraminiferal Research*, 34, 96-101.

## **Presentations Given**

Hintz, C. (Author & Presenter), Wilkinson, A. (Author), Pride, C. (Author), Georgia Aquarium Invited Lecture Series, "Low Effort Marine Algal Biomass Production for Biofuels - Closing the Biofuels Energy Balance," Georgia Aquarium, Atlanta, GA. (May 11, 2010).

Profetta, L., Hill, L., Richardson, T., Twinning, B., Hintz, C., Myrick, M., Shaw, T., 2008 Meeting, "Construction, figures of merit, and testing of a single-plankton excitation spectroscopy system.," Fed Analytical Chemical and Spectroscopy Society. (2008).

Hill, L., Profeta, L., Lawrenz, E., Richardson, T., Twinning, B., Hintz, C., Shaw, T., Myrick, M., Conference Analytical Chemistry, "Studies of the fluorescence excitation spectroscopy of phytoplankton at the single organism level.," American Chemical Society, Pittsburgh. (2008).

Hintz, C., Shaw, T., Chandler, G. T., e. a., Ocean Sciences Meeting, "Calcite saturation effects on the Mg and Sr distribution coefficients of cultured benthic foraminifera.," American Society of Limnology and Oceanography. (2008).

Blanks, J., Chandler, G. T., Hintz, C., e. a., Ocean Sciences Meeting, "Intra- and inter-species variation of DMg and DSr in live benthic foraminiferal calcite and aragonite from the Charleston Bump spanning five years of study.," American Society of Limnology and Oceanography, Orlando. (2008).

Hintz, C., Chandler, G. T., Shaw, T., e. a., Fall Meeting, "Active pCO<sub>2</sub>-control of seawater culture systems for laboratory-based biogeochemical experimentation investigating global ocean acidification.," American Geophysical Union, San Fransisco. (2007).

## **Contracts, Grants and Sponsored Research**

### **Contract**

Hintz, Christopher (Principal), Pride, Carol (Co-Principal), "UNEEC - Algae Biofuels Production," Sponsored by NASA - NSTI - UNCF-SP, Federal, \$125,000.00. (March 2009 - February 2011).

## **Grant**

Hintz, Christopher (Supporting), Timmons, Maryellen (Principal), "Technological Outdoor Experiential Training for Informal Educators in the Southeast," Sponsored by NOAA, Federal.

Hintz, Christopher (Supporting), Chianelli, Russell (Principal), Pride, Carol (Supporting), "UTEP-Algae Biofuels Consortium," Sponsored by Department of Energy, Federal, \$2,286,280.42.

Hintz, Christopher (Principal), Wilkinson, Amber (Co-Principal), "Utilizing High-nutrient Municipal Wastewater Addition to Marine Algae Cultures Grown for Biofuels Production," Sponsored by NASA Earth and Space Science Fellowship, Federal, \$28,987.00.

Hintz, Christopher (Supporting), Curran, Carla (Principal), Cox, Tara M (Co-Principal), Pride, Carol (Supporting), Gilligan, Matthew (Supporting), Hoskins, Dionne (Supporting), "Title VII - Coastal Ocean and Underwater Research to Advance Graduate Education (COURAGE)," Sponsored by Department of Education, Federal, \$3,000,000.00. (September 2009 - August 2015).

## **Research in Progress**

"Development of Novel Technologies Useful for Sea Turtle Conservation Effort" (On-Going)

"Establishment of transient population effects on nutrient loadings in Savannah River" (Planning)

"NASA / UNCF-SP UNEEC Cluster" (On-Going)

In collaborative effort to develop energy and environmental solutions. SSU contribution is developing advanced culture techniques to produce marine algae used in biofuels production.

"Novel Techniques for analyzing Seawater Carbonate Chemistry" (On-Going)

Develop a new high-precision technique for measuring total alkalinity in seawater using spectrophotometry. Develop a new high-precision, low volume technique for measuring pCO<sub>2</sub> in highly-variable estuarine seawater.

## **SERVICE**

### **Department Service**

Aquarium Science Certificate Program Development. (March 2009 - Present).

Committee Member, Marine Sciences Faculty. (March 2009 - Present).

### **College Service**

Committee Member, Academic Advisement Committee.

Committee Member, Tenure, Promotion, Reappointment Policy Development Committee. (December 2009 - Present).

### **University Service**

Committee Member, Board of Student Ethics. (August 2009 - Present).

**Dr. Kuppuswamy Jayaraman**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 358 -3274  
Email: jayaramk@savannahstate.edu

## **Education**

Ph D, Ernst Moritz Arndt University, 1972.  
Major: Environmental Engineering

MS, University of Madras, 1965.  
Major: Public Health Engineering

BS, Sri Venkateswara University, 1961.  
Major: Civil Engineering

## **Professional Positions**

### **Academic - Post-Secondary**

Associate Professor, Savannah State University. (August 15, 1996 - Present).

Acting Dean, Savannah State University. (July 1, 2008 - July 15, 2009).

Chair, Department of Engineering Technology, Savannah State University. (August 15, 1999 - July 15, 2008).

Acting Dean, Savannah State University. (May 1, 2001 - June 1, 2004).

## **Professional Memberships**

Engineers Without Borders - USA. (May 1, 2008 - Present).

American Society of Engineering Education. (June 1, 1998 - Present).

American Society of Civil Engineers. (May 1, 1981 - Present).

Chartered Institution of Water & Environmental Management, UK. (May 1, 1981 - May 1, 2002).

Royal Society of Health, UK. (May 1, 1981 - May 1, 2002).

## **TEACHING**



## **Teaching Experience**

### **Savannah State University**

CIVT 3101, Surveying, 1 course.  
CIVT 3211, Construction Estimating & Management, 1 course.  
CIVT 3301, Hydraulics & Engineering Hydrology, 1 course.  
CIVT 4201, Environmental Engineering, 1 course.  
CIVT 4211, Environmental Pollution Control, 2 courses.  
CIVT 4301, Urban Planning, 1 course.

## **RESEARCH**

### **Contracts, Grants and Sponsored Research**

#### **Grant**

Sivapatham, Paramasivam (Principal), Jayaraman, Kuppuswamy (Co-Principal),  
"Research, Education and Experiential Learning Program for Environmentally  
Sustainable Integrated Nutrient Management Practices," Sponsored by United States  
Department of Agriculture - International Science and Education Program, Federal,  
\$150,000.00.

Sivapatham, Paramasivam (Co-Principal), Jayaraman, Kuppuswamy (Principal),  
"Scholarships for Training in Alternative Route to Teaching (START)," Sponsored  
by National Science Foundation, Federal, \$1,199,986.00.

Mustafa, Mohamad (Supporting), Lemma, Mulatu (Principal), Jayaraman, Kuppuswamy  
(Co-Principal), Sivapatham, Paramasivam (Co-Principal), Lambright, Jonathan (Co-  
Principal), "PRISM Building Undergraduate Innovations in Lower Divisions in  
STEM," Sponsored by NSF, Federal, \$1,500,000.00. (2009 - 2014).

Jayaraman, Kuppuswamy (Principal), "Peach State Louis Stokes Alliance for Minority  
Participation (PSLSAMP)," Sponsored by NSF, Federal, \$500,000.00. (October 15,  
2005 - October 15, 2010).

Jayaraman, Kuppuswamy (Principal), "Targeted Infusion Grant," Sponsored by NSF,  
Federal, \$149,967.00. (September 1, 2006 - August 1, 2008).

**Alex Kalu**  
Savannah State University  
Engineering Technology & Mathematics  
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Email: kalua@savannahstate.edu

## **Education**

Ph D, Louisiana State University, 1985.

Major: Electrical/Industrial Engineering - ES

Supporting Areas of Emphasis: Nuclear Science, Quantitative Business Analysis

Dissertation Title: An Engineering Approach to Model Order Reduction and Its Application to Controller Design

MS, Louisiana Tech University, 1982.

Major: Electrical Engineering

Supporting Areas of Emphasis: Industrial Engineering

Dissertation Title: Polyphase Induction Motor Speed Control by Solid-State Electronics

BS, The University of Texas, 1980.

Major: Electrical Engineering

NCE (Equivalent to BA) From The University of Nigeria Institute of Education, Alvan Ikoku College of Education, 1975.

Major: Mathematics/Physics

Supporting Areas of Emphasis: Education

## **Professional Memberships**

Institute of Electronics and Electrical Engineers. (January 1, 1986 - Present).

IEEE Automatic Control Society. (September 1, 1987 - September 1, 2007).

American Society of Engineering Educators. (September 1, 1986 - September 1, 2007).

IEEE Circuit and Systems Society. (September 1, 1986 - September 1, 2007).

IEEE Power Society. (September 1, 1986 - September 1, 2007).

IEEE Reliability Society. (September 1, 1986 - September 1, 2007).

## **Development Activities Attended**

Workshop, "Advanced Invention to Venture (AI2V) Sustainable Vision workshop."  
(August 2, 2009 - August 6, 2009).

Conference Attendance, "Innovations Unlimited: Advancing Innovations, Investing in Change," NCIIA. (March 19, 2009 - March 21, 2009).

Conference Attendance, "Disinfection 09," Water Environmental Federation (WEF). (February 28, 2009 - March 3, 2009).

Conference Attendance, "Getting to The point: Ideas, Process, Products," NCIIA. (March 20, 2008 - March 22, 2008).

## **TEACHING**

### **Non-Credit Instruction**

Continuing Education, Engineering Information Foundation (EiF), 12 participants.

Seminar, Department of Education, 10 participants. (March 19, 2009).

### **Directed Student Learning**

Supervised Research, "Study of Fuel Cell Technologies," Other (Within Savannah State University). (September 1, 2009 - December 1, 2009).  
Advised: Therin Young

Supervised Research, "Development of Marketing Tools for RRWTS in Developing Countries," Finance. (December 10, 2008 - September 30, 2009).  
Advised: Zackry Gelow

Supervised Research, "Optimal Battery Charge Cycle for Solar Applications," Other (Within Savannah State University). (January 30, 2004 - April 30, 2006).  
Advised: Asha Richards

Supervised Research, "Solar Oven Tracking for Maximum Irradiation," Other (Within Savannah State University). (January 30, 2004 - April 30, 2006).  
Advised: Thomas Stafford

## **RESEARCH**

### **Contracts, Grants and Sponsored Research**

#### **Grant**

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), Kalu, Alex (Co-Principal), "STEM Regional Education In Engineering And Technology," Sponsored by NSF, Federal, \$1,198,610.00.

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), Kalu, Alex (Co-Principal),  
"Stem Regional Education in Engineering and Technology in Georgia and South  
Carolina," Sponsored by NSF, Federal, \$1,194,675.00.

## **SERVICE**

### **Consulting**

For Profit Organization, TOBY ENERGY GROUP, LLC, Longwood, Florida.  
(November 5, 2009 - Present).

Academic, Eduardo Mondlane University, Maputo, Mozambique. (March 1, 2005 -  
Present).

Academic, Savannah Technical College, Savannah, Georgia. (November 10, 2009 -  
November 30, 2009).

For Profit Organization, CMEIS, Orlando Florida. (May 30, 2006 - September 5, 2006).

**Dr. Jonathan P. Lambright**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 358-3267  
Email: lambrij@savannahstate.edu

## **Education**

Ph D, Georgia Institute of Technology, 1996.  
Major: Mechanical Engineering  
Supporting Areas of Emphasis: CAD/CAM  
Dissertation Title: Intelligent Design of Flat Composite Panels Using Knowledge and Case Based Reasoning

BS, North Carolina A&T State University, 1995.  
Major: Mechanical Engineering

MS, Georgia Institute of Technology, 1993.  
Major: Mechanical Engineering

MS, North Carolina A&T State Univ., 1990.  
Major: Mechanical Engineering

## **Professional Positions**

### **Academic - Post-Secondary**

Associate Professor, Savannah State University. (August 1, 2002 - Present).

### **Government**

Marine Mechanical Engineer, Department of Defense / Chas Naval Shipyard. (June 1985 - August 1988).

## **Licensures and Certifications**

EIT: Engineer In Training, NSPE. (April 1990 - Present).

## **Professional Memberships**

American Society For Engineering Education.

## **RESEARCH**

## Published Intellectual Contributions

### Refereed Journal Articles

Lemma, M., Lambright, J. (2010). The G-Translativity of Logarithmic Transformations., *Advances and Applications in Mathematical Sciences*, 2(1), 159-166.

Lemma, M., Lambright, J. (2009). A Note on Special Abel Matrices into 1., *International Mathematical Forum*, 4(33-36), 1623-1633.

### Conference Proceedings

Li, P., Lambright, J. (2010). *Using clickers in physics lectures*. New York: City University of New York.

Li, P., Lambright, J. (2009). *Using clickers at Savannah State University*. Southern Atlantic Coast Section of the American Association of Physics Teachers Conference.

### Presentations Given

Andreou, S. (Co-Chair), Lambright, J. (Chair), Counselor/Teacher Workshop 2009, "Engineering as a Career," BEEM project/SSU, Savannah. (September 19, 2009).

### Contracts, Grants and Sponsored Research

#### Grant

Andreou, Spyros (Co-Principal), Lambright, Jonathan (Principal), Awan, Ijaz (Supporting), "Business Engineering Education Model," Sponsored by NSF, Federal.

Mustafa, Mohamad (Supporting), Lemma, Mulatu (Principal), Jayaraman, Kuppuswamy (Co-Principal), Sivapatham, Paramasivam (Co-Principal), Lambright, Jonathan (Co-Principal), "PRISM Building Undergraduate Innovations in Lower Divisions in STEM," Sponsored by NSF, Federal, \$1,500,000.00. (2009 - 2014).

Sivapatham, Paramasivam (Supporting), Chetty, Chello (Co-Principal), Lambright, Jonathan (Co-Principal), Johnson, Johnny (Co-Principal), "Minority Access for Graduate Education and Careers in STEM Program Plus: Strengthening / sustaining the Culture of Excellence for STEM Education at SSU," Sponsored by National Science Foundation, Federal, \$2,063,394.00. (October 1, 2009 - September 30, 2014).

Sivapatham, Paramasivam (Co-Principal), Lemma, Mulatu (Principal), Lambright, Jonathan (Co-Principal), "PRISM Building Undergraduate Innovations in Lower Divisions in STEM," Sponsored by National Science Foundation, Federal, \$1,499,999.00. (September 1, 2009 - August 31, 2014).

Lemma, Mulatu (Principal), Lambright, Jonathan (Co-Principal), Sivapatham, Paramasivam (Co-Principal), "PRISM Building Undergraduate Innovations in Lower Divisions in STEM," Sponsored by National Science Foundation, Federal. (September 1, 2009 - August 31, 2014).

### **Research in Progress**

"Building a joint physics program with University of Georgia" (On-Going)

### **Awards and Honors**

#### **Service, University**

Mentor Award, HBCU-UP Program. (October 2006).

**Pengfei Li**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 356-2480  
Email: lipengf@savannahstate.edu

## **Education**

Ph D, The Ohio State University, 2007.

Major: Physics

Supporting Areas of Emphasis: Physics education research

MS, the Ohio State University, 2002.

Major: Electrical Engineering

Supporting Areas of Emphasis: Digital and analog circuit design

BS, University of Science and Technology of China, 2000.

Major: Chemical Physics

Supporting Areas of Emphasis: Combustion Chemistry

## **Professional Positions**

### **Academic - Post-Secondary**

Assistant Professor, Savannah State University. (August 1, 2007 - Present).

## **Professional Memberships**

American Physical Society. (September 2003 - Present).

American Association of Physics Teachers. (April 2003 - Present).

## **Development Activities Attended**

Conference Attendance, "Synergy in STEM," City University of New York. (November 2009).

Conference Attendance, "Southern Atlantic Coast Section of the American Association of Physics Teachers Conference," Augusta State University. (October 2009).

Workshop, "SSU Grant Writing Workshop," Savannah State University. (September 2009).

Workshop, "OSRA Grants Writing Training Workshop," Savannah State University. (July 2009).



Conference Attendance, "USG annual physics and astronomy meeting," Macon State University. (April 2009).

Workshop, "SSU Grant Writing Workshop," Savannah State University. (April 2009).

Conference Attendance, "'Day of Science" trip," Oak Ridge National Laboratory. (October 2007).

### **Awards and Honors**

Excellent Student Leader, University of Science and Technology of China. (March 1, 1997).

## **TEACHING**

### **Teaching Experience**

#### **Savannah State University**

1111, Introductory Physics 1, 1 course.

PHYS 1111, Introductory Physics 1, 1 course.

PHYS 1112, Introductory Physics 2, 2 courses.

### **Awards and Honors**

Excellent Teaching Assistant Award, Department of Physics, the Ohio State University. (May 10, 2007).

## **RESEARCH**

### **Published Intellectual Contributions**

#### **Refereed Journal Articles**

Li, P. (2008). Testing a New Voting Machine Methodology. *Am. J. Phys*, 76, 171.

Li, P. (2005). Toward the effective use of voting machines in physics lectures. *Am. J. Phys*, 73, 554.

#### **Conference Proceedings**

Li, P., Lambright, J. (2010). *Using clickers in physics lectures*. New York: City University of New York.

Li, P., Lambright, J. (2009). *Using clickers at Savannah State University*. Southern Atlantic Coast Section of the American Association of Physics Teachers Conference.

Li, P., Sajwan, K., Hao, I. (2009). *Accumulation of Organochlorine Pesticides in selected fish species collected from St. Simmons estuary, Brunswick, Georgia*. 29th International Symposium on Halogenated Persistent Organic Pollutants proceeding.

### **Presentations Given**

Li, P. (Author & Presenter), Synergy in STEM: Bringing Mathematics, Physics, and Engineering Together Conference, "Using clickers in physics lectures," CUNY, New York. (November 2009).

Li, P. (Author & Presenter), Southern Atlantic Coast Section of the American Association of Physics Teachers Conference, "Using clickers at Savannah State University," Augusta State University, Augusta, GA. (October 2009).

Li, P. (Author & Presenter), USG annual physics and astronomy meeting, "Using of clickers in Historical Black College and Universities," Macon State University, Macon, GA. (April 2009).

### **Media Contributions**

#### **Internet**

Science Daily. (July 18, 2008).

#### **Magazine**

Savannah State University Magazine. (April 2009).

#### **Newspaper**

Savannah Morning News. (May 2010).

### **Contracts, Grants and Sponsored Research**

#### **Grant**

Li, Pengfei (Co-Principal), "Developing a professional master degree at Savannah State University," Sponsored by Savannah State University, State, \$800,000.00. (September 2010 - June 2013).

Li, Pengfei (Principal), "Developing an In-class Electronic Polling System at Savannah State University," Sponsored by Savannah State University, Savannah State University, \$10,700.00. (February 2009 - February 2011).

Li, Pengfei (Co-Principal), "Develop and Assess The Ohio State Standardized Clicker System," Sponsored by Ohio State University, Local, \$84,796.00. (September 2005 - June 2007).

### **Awards and Honors**

Graduate Fellowship, the Ohio State University. (August 1, 2000).

Di Ao Scholarship, University of Science and Technology of China. (May 1, 1997).

### **Research in Progress**

"Building a joint physics program with University of Georgia" (On-Going)

"Developing a Scientific Reasoning Test" (On-Going)

## **SERVICE**

### **Department Service**

Committee Member, Teaching Load. (September 2008 - June 2009).

### **College Service**

Committee Member, New Building Committee. (February 2010 - Present).

Committee Chair, the Engineering Physics development committee. (January 2010 - Present).

Committee Member, •Committee of Professional Master Program development. (October 2009 - Present).

Committee Chair, Committee for a joint physics program with UGA. (September 2009 - Present).

**Dr. Ying Liu**  
Savannah State University  
Engineering Technology & Mathematics  
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Email: liuy@savannahstate.edu

## **Education**

MS, University of South Carolina, 1990.  
Major: Computer Science  
Dissertation Title: Fractal Image Compression

Ph D, Carnegie-Mellon University, 1988.  
Major: Physics  
Dissertation Title: Electromagnetic Weak Radiation Decay

MS, Carnegie-Mellon University, 1984.  
Major: Physics  
Dissertation Title: NA

BS, Lanzhou University, 1982.  
Major: Nuclear Physics  
Dissertation Title: Non-Destructive Measurement via Gamma Ray

## **Licensures and Certifications**

MCDBA (Database Administrator), Microsoft. (November 3, 2000 - Present).

MCSE+MCDBA, Microsoft. (November 3, 2000 - Present).

MCSE (Microsoft Certified System Engineer), Microsoft. (September 1, 2000 - Present).

## **Professional Memberships**

IEEE. (December 1990 - Present).

## **Development Activities Attended**

Tutorial, "Microsoft Certification Courses # 059, 067, 073, 068, 058, 087, 029,"  
Microsoft. (May 2000 - July 2000).

## **Awards and Honors**

International WHO'S WHO among Intellectuals, International Biographical Center,  
Cambridge, England. (1995).

MOST ADMIRABLE MEN AND WOMEN OF THE YEAR, American Biographical Institute. (1995).

WHO'S WHO WORLDWIDE, Who's Who Worldwide Registry, Inc.. (1995).

WHO'S WHO among Asian Americans, Gale Research Inc.. (1994).

## RESEARCH

### Published Intellectual Contributions

#### Conference Proceedings

Liu, Y. (1997). In SPIE (Ed.), *71. High Order Polytomous Boltzmann Machine and Forecasting Time Series I* (1st ed., vol. Vol. 3077, pp. pp. 396 - 408). Proc. SPIE.

Liu, Y. (1995). *68. Canonical Orders and Base Languages of Fractals* (vol. 5, pp. pp. 51 - 56). Intelligent Engineering System Through Artificial Neural Networks/ ASME Press.

Liu, Y. (1995). *67. Nonlinear Dynamics and Cryptosystem*. Proc. of 3rd Technical Conference on Nonlinear Dynamics (Chaos) and Full Spectrum Processing.

Liu, Y. (1995). *65. Unification of two Fractal Families* (vol. Vol. 2488, pp. pp. 350 - 362). Proc. SPIE.

Liu, Y. (1995). *66. Neurons, Psychons, and Emotion* (vol. Vol. 2492, pp. pp. 184 - 198). Proc. SPIE.

Liu, Y. (1995). *61. Solutions of Fractal Equations* (vol. Vol. 2418, pp. pp. 48 - 59). Proc. SPIE.

Liu, Y. (1995). *62. Theta-index of Imagebase* (vol. Vol. 2420, pp. pp. 68 - 81). Proc. SPIE.

Liu, Y. (1995). *63. Boltzmann Machine for Image Block Coding* (vol. Vol. 2424, pp. pp. 434 - 447). Proc. SPIE.

Liu, Y. (1995). *64. Image Block Coding Using Exact Solutions of Fractal Equations* (vol. Vol. 2488, pp. pp. 135 - 149). Proc. SPIE.

Liu, Y. (1994). *60. Video Sequence Compression Using Three-Dimensional Theta-Transformation*. Proc. of IEEE SMC '94.

Liu, Y. (1977). *70. Neural Network Benchmark* (vol. 3077, pp. pp.214 - 224). Proc. SPIE.

Liu, Y. (1977). 69. *Character and Image Recognition and Image Retrieval Using the Boltzmann Machine* (vol. 3077, pp. pp. 706 - 715). Proc. SPIE.

### **Presentations Given**

Liu, Y., Proc. SPIE. Vol. 3077, "Character and Image Recognition and Image Retrieval Using the Boltzmann Machine," SPIE, Orlando, FL. (April 1997).

Liu, Y., Proc. SPIE. Vol. 3077, April, 1997, "High Order Polytomous Boltzmann Machine and Forecasting Time Series I," SPIE, Orlando, FL. (April 1997).

Liu, Y., Proc. SPIE. Vol. 3077, April, 1997, "Neural Network Benchmark," SPIE, Orlando, FL. (April 1997).

Liu, Y., Intelligent Engineering System Through Artificial Neural Networks, "Canonical Orders and Base Languages of Fractals," ASME Press, St. Louis. (November 1995).

### **Contracts, Grants and Sponsored Research**

#### **Grant**

Liu, Ying, "Equipment Needed for CSAB Accreditation of the Computer Science Technology Program," Sponsored by Equipment, Technology and Construction Trust Fund of Georgia, Savannah State University, \$45,700.00. (September 1994 - September 1995).

### **Awards and Honors**

Marquis Who's Who in Science and Engineering, Marquis. (1999).

Marquis Who's Who in the World, Marquis. (1999).

Marquis Who's Who in Science and Engineering, 4th Edition, Marquis. (1998).

### **Research in Progress**

"Image Recognition" (On-Going)

"Image Tagging" (On-Going)

"Video Recognition" (On-Going)

## **SERVICE**

### **University Service**

Committee Member, ReWrite.

Committee Member, Technology Fee. (August 15, 2009 - Present).

### **Awards and Honors**

#### **Service, Professional**

NOMINATION for 1996 ZD Shareware Awards, PC Magazine. (January 1996).

**Dr. Mohamad A. Mustafa**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 358-3272  
Email: mustafam@savannahstate.edu

## **Education**

- Ph D, Wayne State University, 1994.  
Major: Civil Engineering; Major in Structural Engineering  
Dissertation Title: Dissertation Title: Methodology of Inductive Learning: Structural Engineering Application
- MS, Wayne State University, 1985.  
Major: Civil Engineering with specialization in Structure  
Supporting Areas of Emphasis: Soil Mechanics
- BS, Wayne State University, 1983.  
Major: Civil Engineering

## **Professional Positions**

### **Academic - Post-Secondary**

- Professor & Coordinator, Savannah State University, Savannah, GA 31404. (August 2009 - Present).
- Associate Professor & Coordinator, Savannah State University, Savannah, GA 31404. (June 2006 - August 2009).
- Assistant Professor & Coordinator, Savannah State University, Savannah, GA 31404. (September 1994 - June 1998).
- Part Time Faculty, Department of Civil Engineering, Wayne State University, Detroit, MI 48202. (December 1987 - May 1989).
- Graduate Teaching Assistant II, Department of Civil Engineering, Wayne State University. (January 1986 - May 1989).
- Graduate Teaching Assistant I, Department of Civil Engineering, Wayne State University. (January 1984 - December 1985).

### **Professional**

- Consultant, Savannah State University NSF Project. (May 27, 2007 - August 1, 2007).



Consultant, Southern College of Technology. (May 27, 1996 - June 11, 1996).

Math Tutor, Learning Enrichment Center, Lincoln Park, MI 48146. (November 1989 - July 1990).

### **Licensures and Certifications**

Using Embedded Assessment to Improve Student Learning and Teaching Effectiveness, Savannah Technical Institute. (December 5, 2008 - Present).

Civil 3D Teacher Training Program, AutoDesk. (August 27, 2007 - Present).

Academic Advisement for Student Success and Retention Workshop, Savannah State University. (April 21, 2006 - Present).

STAAD Certified Engineer Training, Bentley. (December 3, 2005 - Present).

Web CT Course Designer (How to Build a Course) Workshop, Savannah State University. (May 30, 2005 - Present).

Alternative Energy Technology Innovations Conference, Georgia Institute of Technology. (May 12, 2005 - Present).

The ETS Workshop on Assessment, Savannah State University. (January 22, 2004 - Present).

Web CT Course Designer (How to Build a Course) Workshop, Savannah State University. (May 30, 2003 - Present).

Web CT Vista As A Student Workshop, Savannah State University. (May 28, 2003 - Present).

Writing Across The Curriculum (Facilitator: Professor Stephani Hewitt of Education at The Citadel), Savannah State University. (2003 - Present).

Banner/Paws Workshop, Savannah State University. (2002 - Present).

Writing Across The Curriculum (Facilitator: Professor Patricia Williams of Sam Houston State University), Savannah State University. (2002 - Present).

Communication Across the Curriculum Workshop, Savannah State University. (March 29, 2001 - Present).

Communications 101 & Internet 103, Savannah State University. (March 1996 - Present).

## **Professional Memberships**

Expert System Committee.

Savannah Economic Development Authority.

Treasurer of the Instrumentation Division, American Society for Engineering Education.  
(2009 - Present).

American Society of Civil Engineers. (1981 - Present).

## **Awards and Honors**

Chi Epsilon Honor Society, Chi Epsilon Honor Society. (1983).

Dean's Honor List, Wayne State University - College of Engineering. (1983).

Golden Key National Honor Society, Golden Key National Honor Society. (1983).

Dean's Honor List, Wayne State University - College of Engineering. (1982).

Tau Beta Pi Honor Society, Tau Beta Pi Honor Society. (1982).

Dean's Honor List, Wayne State University - College of Engineering. (1981).

## **TEACHING**

### **Awards and Honors**

Who's Who Among America's Teachers, Who's Who Among America's Teachers.  
(2010).

Who's Who Among America's Teachers, Who's Who Among America's Teachers.  
(2007).

Who's Who Among America's Teachers, Who's Who Among America's Teachers.  
(2006).

Who's Who Among America's Teachers, Who's Who Among America's Teachers.  
(2005).

Who's Who Among America's Teachers, Who's Who Among America's Teachers.  
(1998).

Who's Who Among America's Teachers, Who's Who Among America's Teachers.  
(1996).

## RESEARCH

### Presentations Given

- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "Project Based Learning," American Society of Engineering Education, Louisville, Kentucky. (June 2010).
- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "An Integrated Project-based Course in Mathematics and Engineering Technology," American Society of Engineering Education, Austin, TX. (June 2009).
- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "An Integrated Project-based Course in Mathematics and Engineering Technology," American Society of Engineering Education, Austin, TX. (June 2009).
- Mustafa, M. (Author & Presenter), Alva, R. (Author & Presenter), Yousuf, A. (Author & Presenter), ASEE Annual conference, "Multi-disciplinary Project and Collaborative Teams," American Society of Engineering Education, Austin, TX. (June 2009).
- Mustafa, M. (Author & Presenter), Alva, R., Yousuf, A. (Author & Presenter), ASEE Annual conference, "Multi-disciplinary Project and Collaborative Teams," American Society of Engineering Education, Austin, TX. (June 2009).
- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "Upward Bound/JETS Junior Engineering and Technology summer program," American Society of Engineering Education, Pittsburgh, PA. (June 2008).
- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "Upward Bound/JETS Junior Engineering and Technology summer program," American Society of Engineering Education, Pittsburgh, PA. (June 2008).
- Mustafa, M. (Author & Presenter), Yousuf, A. (Author & Presenter), ASEE Annual conference, "Utilization of WebCT in Course Development," American Society of Engineering Education, Chicago, IL. (June 2006).
- Mustafa, M. (Author & Presenter), Yousuf, A. (Author & Presenter), ASEE Annual conference, "Utilization of WebCT in Course Development," American Society of Engineering Education, Chicago, IL. (June 2006).
- Mustafa, M. (Author & Presenter), Yousuf, A. (Author & Presenter), Share best teaching and learning practices through faculty and student engagement at SSU, "Utilization of WebCT in Course Development," Savannah State University, Savannah, GA. (June 2006).

Mustafa, M. (Author & Presenter), Third Congress on Computing in Civil Engineering, "Tutorial: Machine Learning," American Society of Civil Engineers, Anaheim, CA. (June 1996).

Mustafa, M. (Author & Presenter), Second Congress on Computing in Civil Engineering, "Preparation of Examples for Learning Systems: A Strategy for Computer-Generated Examples," American Society of Civil Engineers, Atlanta, GA. (June 1995).

Mustafa, M. (Author & Presenter), Second Congress on Computing in Civil Engineering, "Preparation of Examples for Learning Systems: A Strategy for Computer-Generated Examples," American Society of Civil Engineers, Atlanta, GA. (June 1995).

Mustafa, M. (Author & Presenter), ASCE 8th Computing in Civil Engineering Conference, Expert Systems in Civil Engineering Symposium, "Inductive Learning Selection of Wind Bracing Systems in Tall Buildings," American Society of Civil Engineers, Dallas, Texas. (June 1992).

Mustafa, M. (Presenter), "Knowledge Acquisition in Structural Engineering," University of Toledo, Ohio, Toledo, Ohio. (April 1990).

Mustafa, M. (Presenter), "Knowledge Acquisition in Structural Engineering," University of Waterloo, Canada, Waterloo, Canada. (February 1990).

Mustafa, M. (Presenter), Inductive Programming Workshop: The International Inductive Programming Special Interest Group, "Induction in Structural Engineering," Wayne State University, Detroit, MI. (August 1989).

## **Contracts, Grants and Sponsored Research**

### **Contract**

Mustafa, Mohamad (Principal), "Structure Point software for reinforced concrete design, 11-seats," Sponsored by Southeast Cement Association, Local. (2007 - Present).

### **Grant**

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), Kalu, Alex (Co-Principal), "STEM Regional Education In Engineering And Technology," Sponsored by NSF, Federal, \$1,198,610.00.

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), Kalu, Alex (Co-Principal), "Stem Regional Education in Engineering and Technology in Georgia and South Carolina," Sponsored by NSF, Federal, \$1,194,675.00.

Mustafa, Mohamad (Supporting), Lemma, Mulatu (Principal), Jayaraman, Kuppuswamy (Co-Principal), Sivapatham, Paramasivam (Co-Principal), Lambright, Jonathan (Co-

- Principal), "PRISM Building Undergraduate Innovations in Lower Divisions in STEM," Sponsored by NSF, Federal, \$1,500,000.00. (2009 - 2014).
- Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Co-Principal), "Junior Engineering and Technology Summer Program," Sponsored by UNITE/JETS, Other, \$31,500.00. (June 2010 - August 2010).
- Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Co-Principal), "Junior Engineering and Technology Summer Program," Sponsored by UNITE/JETS, Other, \$30,000.00. (June 2009 - August 2009).
- Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), "An Integrated Project-Based Course in Mathematics and Engineering," Sponsored by NCIIA, Other, \$7,500.00. (2007 - 2008).
- Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Co-Principal), "Junior Engineering and Technology Summer Program," Sponsored by UNITE/JETS, Other, \$31,500.00. (June 2008 - August 2008).
- Mustafa, Mohamad (Principal), Yousuf, Asad (Co-Principal), "A Comparative Study of the Learning Effectiveness Of an Enhanced Multimedia Web Based Delivery System Versus Traditional Classroom Instruction," Sponsored by The Teaching and Learning Grant, Title III at Savannah State University, Savannah State University, \$8,000.00. (2006 - 2007).
- Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), "Development of Animatronics and Emotional Face Displays of Robots," Sponsored by CASTME, Title III at Savannah State University, Savannah State University, \$4,000.00. (2006 - 2007).
- Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Co-Principal), "Junior Engineering and Technology Summer Program," Sponsored by UNITE/JETS, Other, \$32,500.00. (June 2007 - August 2007).

## **SERVICE**

### **Department Service**

- Committee Member, Mathematics Search Committee. (2010 - Present).
- Committee Member, Internal Advisory Committee (IAC) for the Minority Science and Engineering Improvement Program (MSEIP). (September 2009 - Present).
- Committee Chair, Engineering Technology Department Curriculum and Accreditation Review Committee. (August 2008 - Present).

Committee Member, Industrial Advisory Committee for the Civil Engineering Technology Program. (September 1995 - Present).

Civil Engineering Technology Coordinator. (September 1994 - Present).

### **College Service**

Committee Member, Bachelors in Facilities and Construction Management Development Committee. (2010 - Present).

Committee Member, New Engineering Technology Building Committee. (2010 - Present).

Committee Member, COST General Education Outcome Committee. (2009 - Present).

Committee Chair, COST Tenure, Promotion, and Reappointment Policy Development. (2009 - Present).

Committee Member, Coordinator's Committee. (September 2007 - Present).

Committee Member, COST College Honor's convocation committee. (2007 - Present).

Committee Chair, COST Personnel Committee. (January 2010 - April 2010).

Committee Member, COST Personnel Committee. (September 2009 - December 2009).

Committee Member, Dean's Advisory board committee. (2004 - 2009).

Committee Member, Master's in Technology Education and Engineering Technology Management Committee. (2005 - 2006).

### **University Service**

Committee Member, New Engineering Technology Building Committee. (2010 - Present).

Committee Member, Screening/Interview Committee For Director of Academic Assessment. (2010 - Present).

Committee Member, Institution General Education Committee. (2009 - Present).

Committee Member, Institution President's Distinguished Faculty Award Committee. (2009 - Present).

Committee Member, Institution Program Review Committee. (2009 - Present).

Committee Member, Faculty Handbook Committee. (2008 - Present).

Committee Member, SSU SACS Effectiveness Committee. (2008 - Present).

University Senate Service, Faculty Senator. (2008 - 2010).

Committee Member, Dean's Search Committee of the Schools of Sciences and Technology. (2008 - 2009).

University Senate Service, Salary Study Committee. (2007 - 2008).

Committee Member, Institution Admission Appeals Committee. (2006 - 2007).

Faculty Mentor, Undeclared academic advisor through the AAMP. (1998 - 2007).

### **Professional Service**

Officer, Treasurer, American Society of Engineering Education. (2009 - Present).

### **Consulting**

Government, GA DOT, Atlanta. (May 27, 1996 - June 11, 1996).

**Dr. Hyounkyun Oh**  
Savannah State University  
Engineering Technology & Mathematics  
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Email: hoh@savannahstate.edu

## **Education**

Ph D, University of Iowa, 2005.

Major: Applied Mathematics

Dissertation Title: SPARK methods for mixed index DAEs of index 2 & 4 and their applications in mechanics

MS, University of Iowa, 2004.

Major: Mechanical Engineering

Supporting Areas of Emphasis: Molecular dynamics

Dissertation Title: Energy conservative numerical integrators for a Lennard-Jones potential

MS, University of Iowa, 2003.

Major: Applied Mathematics

Supporting Areas of Emphasis: Mechanical Engineering

MS, Chungnam National University, 1997.

Major: Mathematics

Supporting Areas of Emphasis: Numerical Analysis in PDE

Dissertation Title: Analysis of Chebyshev-Legendre methods for some PDEs

BS, Chungnam National University, 1995.

Major: Mathematics

## **Development Activities Attended**

Workshop, "Scholarship on Teaching and Learning (SoTL) Workshop," SSU. (April 16, 2010).

Conference Attendance, "MAA-SE," Mathematical Association of America. (March 2010).

Conference Attendance, "Eagle Undergraduate Mathematics Conference," Georgia Southern University. (February 22, 2010).

Workshop, "BEEM project," Center for Academic Success Advisement in SSU. (June 24, 2009 - July 8, 2009).



Conference Attendance, "2009 MAA-SE Meeting," Mathematical Association of America. (March 2009).

Conference Attendance, "2009 AMS & MAA Joint Meeting," AMS and MAA. (January 5, 2009 - January 9, 2009).

Conference Attendance, "PSLSAMP Research Conference," PSLAMP. (June 22, 2008 - June 23, 2008).

Conference Attendance, "2008 MAA-SE meeting," Mathematical Association of America. (March 28, 2008 - March 29, 2008).

Conference Attendance, "HBCU-UP National Research Conference," NSF & AAAS. (October 4, 2007 - October 7, 2007).

Conference Attendance, "33th National Society of Black Engineers Conference," National Society Black Engineers. (March 28, 2007 - April 1, 2007).

Workshop, "Algebra Reform Project," US Military Academy. (June 5, 2006 - June 8, 2006).

Workshop, "NSF Day," Georgia Southern University. (April 27, 2006).

## **TEACHING**

### **Teaching Experience**

#### **Savannah State University**

MATH 1111, College Algebra, 12 courses.  
MATH 1113, Precalculus, 11 courses.  
MATH 2101, Calculus I, 4 courses.  
MATH 2111, Calculus II, 6 courses.  
MATH 2121, Calculus III, 2 courses.  
MATH 2301, Intro. Discrete Math, 1 course.  
MATH 2501, Calculus I for engineers, 3 courses.  
MATH 2511, Calculus II for engineers, 1 course.  
MATH 3301, Differential Equations, 4 courses.  
MATH 3401, Modern Geometry, 1 course.  
MATH 3501, Numerical Analysis, 2 courses.  
MATH 4201, Analysis I, 1 course.  
MATH 4221, Complex Analysis, 1 course.  
MATH 4601, Mathematical Research, 1 course.  
MATH 4901, Senior Seminar, 2 courses.

### **Directed Student Learning**

Supervised Research, "Root Finding Methods for ill-conditioned Newton methods," Other (Within Savannah State University). (March 1, 2010 - Present).  
Advised: Blake William

Supervised Research, "Development of Bijection," Other (Within Savannah State University). (March 1, 2010 - Present).  
Advised: Terry Woodford

Supervised Research, "What is the winning number?," Other (Within Savannah State University). (March 1, 2010 - May 9, 2010).  
Advised: Ezinne Igbonagwam

Supervised Research, "Digital Image Processing," Other (Within Savannah State University). (August 1, 2009 - December 7, 2009).  
Advised: Keisha Barkley

Supervised Research, "Digital Image Processing: How to Make a Cartoon Using MATLAB," Other (Within Savannah State University). (August 1, 2009 - December 7, 2009).  
Advised: Kelvin Frazier

Supervised Research, "Mathematical Modeling of Human Arm Motion for Optimization," Other (Within Savannah State University). (January 1, 2009 - August 1, 2009).  
Advised: Ericka Bulter

Supervised Research, "Accurate 3D simulation of Human Arm Motion," Other (Within Savannah State University). (January 1, 2009 - August 1, 2009).  
Advised: Neil Thompson

Supervised Research, "Development of Math Flash Games I," Other (Within Savannah State University). (January 1, 2007 - August 1, 2007).  
Advised: Jerome Temple

Supervised Research, "Development of Math Flash Games II," Other (Within Savannah State University). (January 1, 2007 - August 1, 2007).  
Advised: Wayne Tyson

Supervised Research, "Simulation of Tennis Player's Swing Arm Motion," Other (Within Savannah State University). (January 1, 2006 - August 1, 2006).  
Advised: Onaje Lewis

Supervised Research, "Road of the Ring," Other (Within Savannah State University). (January 1, 2006 - August 1, 2006).  
Advised: Timothy Ransom

## RESEARCH

### Published Intellectual Contributions

#### Refereed Journal Articles

- Oh, H., Ransom, T., Yousuf, A., Kim, S. (2010). Applicable Example of Line Integral: Effect of the Ring on the 100m Sprinter's Record. *Technology Interface Journal*, 10(5).
- Oh, H., Yousuf, A., Kim, S. (2010). Contemporary College Algebra Course. *2010 ASEE annual conference & exposition*(AC 2010-785). [soa.asee.org/paper/conference/paper-view.cfm?id=23334](http://soa.asee.org/paper/conference/paper-view.cfm?id=23334)
- Oh, H., Lewis, O., Yousuf, A., Kim, S. (2010). Simulation of the Tennis Player's Swing Arm Motion. *IJME journal*, 9(1).
- Oh, H., Lu, J. (2005). Computing Lyapunov exponents of continuous dynamical systems: method of Lyapunov vectors. *Chaos, Solitons & Fractals*, 25(5), 1879-1892.

#### Conference Proceedings

- Oh, H., Yousuf, A. (2009). *An Integrated Project-based Course in Mathematics and Engineering Technology*. 2009 Synergy in STEM: Bringing Mathematics, Physics, and Engineering Together Conference.

#### Presentations Given

- Oh, H. (Author), Yousuf, A. (Author & Presenter), 2010 ASEE Annual Conference and Exposition, "Contemporary College Algebra Course," Louisville, Kentucky. (June 2010).
- Oh, H. (Author), Yousuf, A. (Author & Presenter), 2009 Synergy in STEM: Bringing Mathematics, Physics, and Engineering Together Conference, "An Integrated Project-based Course in Mathematics and Engineering Technology," New York, NY. (October 2009).
- Oh, H. (Author & Presenter), BEEM Project Workshop, "Magical Mathematics," Savannah State University, Savannah State University. (June 2009).
- Oh, H. (Author & Presenter), 2009 MAA-SE, "Non-STEM majors' challenge to Preclculus," Mathematical Association of America, Belmont University, TN. (March 2009).
- Oh, H. (Author & Presenter), Midwest NA conference, "Unified Approach to solve mechanical dynamic systems," Univeristy of Iowa, Iowa City, IA. (2005).

## **Contracts, Grants and Sponsored Research**

### **Grant**

Oh, Hyounkyun (Co-Principal), "College Algebra Reform Project," Sponsored by US Military Academy, Savannah State University, \$5,000.00. (August 2007 - December 2009).

### **Sponsored Research**

Oh, Hyounkyun, "Development of a unified NA DAE solvers," Sponsored by EARDA/NIH Pilot grant, Private, \$5,570.00. (August 2005 - December 2005).

## **Intellectual Contributions in Submission**

### **Refereed Journal Articles**

Oh, H., Jay, L. (2011). On the Computation of Mixed Index type Differential-Algebraic Equations. *ACTA Applicanda Mathematicae*.

Oh, H., Jay, L. (2011). Specialized-Partitioned Additive Runge-Kutta methods applied to mixed index differential-algebraic equations of index 2 & 3. *SIAM J of Computational Mathematics*.

## **Research in Progress**

"Development of Tree Structure for mixed index DAE" (Writing Results)

"Unified Algorithm for Mechanical Systems with Various Constraints" (Writing Results)

## **SERVICE**

### **Department Service**

Committee Member, College Algebra Reform Project. (January 2006 - December 2009).

Committee Member, Faculty Search Committee. (August 2006 - May 2009).

### **College Service**

Committee Member, ADHOC Faculty By-Laws Development Committee. (August 2009 - Present).

Committee Member, Master of Science Program Development Committee. (August 2009 - Present).

## **University Service**

Faculty Senate. (August 2007 - Present).

Seminar, "Reaching and Teaching Across Generations," MATEC Networks Webinars. (2009).

Seminar, "Sustaining Technical Programs: Challenges and Solutions," MATEC Networks Webinars. (2009).

Seminar, "Alternative Energy Sources: A Technical Elective," Wiley Faculty Network. (2008).

Seminar, "Concepts Mastery in Biochemistry," Wiley Faculty Network. (2008).

Seminar, "Learning from Visuals: Explore the Opportunities," Wiley Faculty Network. (2008).

Seminar, "Matching Online Assessments to Online Pedagogies: Choices, Challenges, and Concerns," Wiley Faculty Network. (2008).

Seminar, "Reading with Understanding, Discussing with Confidence," Wiley Faculty Network. (2008).

Seminar, "Teaching a Course in Database System Internals," Wiley Faculty Network. (2008).

Seminar, "Teaching and Teaching Content with Technology in 2008," Wiley Faculty Network. (2008).

Workshop, "Academic Advisement for Student Success and Retention Workshop," Savannah State University. (2008).

Workshop, "Grant writing Workshop," Office of Sponsored Programs. (2008).

Workshop, "Grant Writing Workshop by David C. Morrison, Ph.D. (Grant Writers Seminars and Workshops, LLC)," Office of Sponsored Programs. (2008).

Workshop, "ETS Workshop on Assessment," ETS. (2004).

Workshop, "Faculty Portfolio Workshop," Savannah State University. (2003).

Workshop, "Banner/Paws Workshop," Savannah State University. (2002).

Workshop, "Involving Faculty and Students in Research Workshop," Savannah State University. (2002).

Workshop, "ABET/TEI Workshop," ABET. (2001).

Workshop, "Pro Engineer/Solid Modeling Workshop," Savannah State University Mechanical Engineering Technology Program. (2001).

Course, "8 Hour Annual Refresher Safety & Health For Hazardous Waste Sites Course," U.S. Army Corps of Engineers: Savannah District. (1999).

Workshop, "Creative Learning Environments Workshop," Savannah State University. (1999).

Workshop, "Grant Pre- and Post- Development Workshop," Office of Research and Sponsored. (1998).

Workshop, "Assessment Workshop," Savannah State University. (1997).

Workshop, "Faculty Research Development Workshop," Savannah State University EARDA Program. (1997).

Workshop, "Communications 101 Workshop," Savannah State University. (1996).

Workshop, "40 Hours Health & Safety Training Program," The TEST Institute. (1995).

Workshop, "Energy Systems Training," Sandia National Laboratory. (1994).

Workshop, "Renewable Energy For African Development (REFAD)," United States Department of Energy. (1994).

## **SERVICE**

### **Department Service**

Committee Member, Grade Review Committee (7). (2009).

Coordinator, MAGEC-STEM 360: Two year Technical College Coordinator. (2008 - 2009).

Committee Member, Grade Review Committee. (2007).

Committee Member, Program Review Implementation Committee. (2002 - 2003).

Committee Member, Program Review Recommendations Committee. (2002 - 2003).

Committee Member, Search Committee – GTREP Position in Civil/Mechanical Engineering. (2002).

### **College Service**

Committee Member, Ad Hoc Cost Core Curriculum Committee. (2009 - 2010).

Committee Member, Facilities and Building Management Program Committee. (2009 - 2010).

Committee Member, Post-Tenure Review Policy Committee. (2009 - 2010).

Committee Member, Math Professor Search Committee. (2002 - 2003).

Committee Member, Recruitment and Retention Committee. (2002 - 2003).

Committee Member, DEAN of COST Search Committee. (2001 - 2002).

### **University Service**

Committee Member, General Education Core Curriculum Committee. (2009 - 2010).

Committee Member, Search Committee for Director of Continuing Education. (2004 - 2005).

Committee Member, Committee on Centers of Excellence. (2002 - 2003).

Committee Member, Regents Test Special Committee. (2002).

Committee Member, Athletic Committee. (2001).

Committee Member, Follow-Up on focus Group Discussion/Academic Planning and Priorities Committee. (2001).

### **Public Service**

Judge, Georgia's First District Science and Engineering Fair Judge, Savannah, Georgia. (1996 - 2004).

**Asad Yousuf**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 358-4288  
Email: yousufa@savannahstate.edu

## **Education**

EDD, The University of Georgia, 1999.

Major: Workforce Education

Supporting Areas of Emphasis: Technology Education

Dissertation Title: Self-efficacy and vocational interests in the prediction of academic performance of students in engineering technology

MS, University of Cincinnati, 1982.

Major: Electrical Engineering

Supporting Areas of Emphasis: Computer

BS, N.E.D Engineering University, 1980.

Major: Electronics Engineering

Supporting Areas of Emphasis: Computer and Communication

## **Professional Positions**

### **Academic - Post-Secondary**

Professor, Savannah State University. (August 1996 - Present).

Associate Professor, Savannah State University. (September 1991 - September 1996).

Assistant Professor, Savannah State University. (1982 - 1991).

Assistant Professor, Mankato State University. (1987 - 1988).

### **Industrial**

Research and Design Electrical Engineering (Summer Work), Robert Becker Laboratory. (1997 - 2002).

Research and Design Electrical Engineering ( Summer work), Lockheed Martin. (1994 - 1997).

Universal Energy Systems (2 Year Project). (1990 - 1992).

Universal Energy Systems (Summer Work). (1989).



Research and Design Electrical Engineering (Summer Work), NASA. (1987).

### **Licensures and Certifications**

Network+ certified, Comp TIA. (May 10, 2004 - Present).

A+ certified, Comp TIA. (October 10, 2003 - Present).

Microsoft Certified Systems Engineer (MCSE),, Microsoft. (April 12, 2000 - Present).

Professional Engineer, State of Georgia. (June 6, 1995 - Present).

## **RESEARCH**

### **Published Intellectual Contributions**

#### **Refereed Journal Articles**

Oh, H., Ransom, T., Yousuf, A., Kim, S. (2010). Applicable Example of Line Integral: Effect of the Ring on the 100m Sprinter's Record. *Technology Interface Journal*, 10(5).

Oh, H., Yousuf, A., Kim, S. (2010). Contemporary College Algebra Course. *2010 ASEE annual conference & exposition*(AC 2010-785). [soa.asee.org/paper/conference/paper-view.cfm?id=23334](http://soa.asee.org/paper/conference/paper-view.cfm?id=23334)

Oh, H., Lewis, O., Yousuf, A., Kim, S. (2010). Simulation of the Tennis Player's Swing Arm Motion. *IJME journal*, 9(1).

#### **Conference Proceedings**

Oh, H., Yousuf, A. (2009). *An Integrated Project-based Course in Mathematics and Engineering Technology*. 2009 Synergy in STEM: Bringing Mathematics, Physics, and Engineering Together Conference.

#### **Presentations Given**

Yousuf, A. (Author & Presenter), ASEE, "Digital Communication Course with computer networking in EET," ASEE, Salt Lake City, Utah.

Oh, H. (Author), Yousuf, A. (Author & Presenter), 2010 ASEE Annual Conference and Exposition, "Contemporary College Algebra Course," Louisville, Kentucky. (June 2010).

- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "Project Based Learning," American Society of Engineering Education, Louisville, Kentucky. (June 2010).
- Oh, H. (Author), Yousuf, A. (Author & Presenter), 2009 Synergy in STEM: Bringing Mathematics, Physics, and Engineering Together Conference, "An Integrated Project-based Course in Mathematics and Engineering Technology," New York, NY. (October 2009).
- Zeng, Y. (Author), Yousuf, A. (Author & Presenter), 2009 ASEE annual conference & exposition, "Fluorescence Correlation Spectroscopy with Confocal Detection," ASEE, Austin, TX. (July 15, 2009).
- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "An Integrated Project-based Course in Mathematics and Engineering Technology," American Society of Engineering Education, Austin, TX. (June 2009).
- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "An Integrated Project-based Course in Mathematics and Engineering Technology," American Society of Engineering Education, Austin, TX. (June 2009).
- Mustafa, M. (Author & Presenter), Alva, R. (Author & Presenter), Yousuf, A. (Author & Presenter), ASEE Annual conference, "Multi-disciplinary Project and Collaborative Teams," American Society of Engineering Education, Austin, TX. (June 2009).
- Mustafa, M. (Author & Presenter), Alva, R., Yousuf, A. (Author & Presenter), ASEE Annual conference, "Multi-disciplinary Project and Collaborative Teams," American Society of Engineering Education, Austin, TX. (June 2009).
- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "Upward Bound/JETS Junior Engineering and Technology summer program," American Society of Engineering Education, Pittsburgh, PA. (June 2008).
- Yousuf, A. (Author & Presenter), Mustafa, M. (Author & Presenter), ASEE Annual conference, "Upward Bound/JETS Junior Engineering and Technology summer program," American Society of Engineering Education, Pittsburgh, PA. (June 2008).
- Mustafa, M. (Author & Presenter), Yousuf, A. (Author & Presenter), ASEE Annual conference, "Utilization of WebCT in Course Development," American Society of Engineering Education, Chicago, IL. (June 2006).
- Mustafa, M. (Author & Presenter), Yousuf, A. (Author & Presenter), ASEE Annual conference, "Utilization of WebCT in Course Development," American Society of Engineering Education, Chicago, IL. (June 2006).

Mustafa, M. (Author & Presenter), Yousuf, A. (Author & Presenter), Share best teaching and learning practices through faculty and student engagement at SSU, "Utilization of WebCT in Course Development," Savannah State University, Savannah, GA. (June 2006).

Yousuf, A. (Author & Presenter), ASEE, "PIC Microcontroller Laboratory," ASEE, Salt Lake City, Utah. (June 2005).

## **Contracts, Grants and Sponsored Research**

### **Grant**

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), Kalu, Alex (Co-Principal), "STEM Regional Education In Engineering And Technology," Sponsored by NSF, Federal, \$1,198,610.00.

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), Kalu, Alex (Co-Principal), "Stem Regional Education in Engineering and Technology in Georgia and South Carolina," Sponsored by NSF, Federal, \$1,194,675.00.

Yousuf, Asad (Co-Principal), "Expanding Minorities Access to Improved Engineering and Technology Education in Georgia and Low Country South Carolina," Sponsored by Department of Education, Federal, \$589,000.00. (October 2008 - October 2011).

Zeng, Yan (Co-Principal), Yousuf, Asad (Principal), "REEP: Renewable Energy and Entrepreneurship Partnerships," Sponsored by NCIIA, Private, \$30,000.00. (September 1, 2009 - September 1, 2011).

Yousuf, Asad (Principal), "Renewable Energy and Entrepreneurship Partnership (REEP)," Sponsored by NCIIA, Private, \$24,000.00. (August 2010 - August 2011).

Yousuf, Asad (Co-Principal), "Articulated Project for the preparation of Instrumentation and Control Technicians," Sponsored by NSF, Federal, \$30,000.00. (June 2008 - June 2011).

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Co-Principal), "Junior Engineering and Technology Summer Program," Sponsored by UNITE/JETS, Other, \$31,500.00. (June 2010 - August 2010).

Yousuf, Asad (Principal), "Junior Engineering and Technology Summer Program," Sponsored by UNITE/US Army (JETS), Federal, \$30,000.00. (June 2010 - August 2010).

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Co-Principal), "Junior Engineering and Technology Summer Program," Sponsored by UNITE/JETS, Other, \$30,000.00. (June 2009 - August 2009).

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), "An Integrated Project-Based Course in Mathematics and Engineering," Sponsored by NCIIA, Other, \$7,500.00. (2007 - 2008).

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Co-Principal), "Junior Engineering and Technology Summer Program," Sponsored by UNITE/JETS, Other, \$31,500.00. (June 2008 - August 2008).

Mustafa, Mohamad (Principal), Yousuf, Asad (Co-Principal), "A Comparative Study of the Learning Effectiveness Of an Enhanced Multimedia Web Based Delivery System Versus Traditional Classroom Instruction," Sponsored by The Teaching and Learning Grant, Title III at Savannah State University, Savannah State University, \$8,000.00. (2006 - 2007).

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Principal), "Development of Animatronics and Emotional Face Displays of Robots," Sponsored by CASTME, Title III at Savannah State University, Savannah State University, \$4,000.00. (2006 - 2007).

Mustafa, Mohamad (Co-Principal), Yousuf, Asad (Co-Principal), "Junior Engineering and Technology Summer Program," Sponsored by UNITE/JETS, Other, \$32,500.00. (June 2007 - August 2007).

**Dr. Yan Zeng**  
Savannah State University  
Engineering Technology & Mathematics  
(912) 356-2316  
Email: zengy@savannahstate.edu

## **Education**

Ph D, University of California at Los Angeles (UCLA), 2006.  
Major: Biophysics  
Dissertation Title: Mismatches and Bubbles in DNA Melting

MS, Peking University, 2000.  
Major: Physical Electronics

BS, Peking University, 1997.  
Major: Electronics

## **Professional Positions**

### **Academic - Post-Secondary**

Assistant Professor, Savannah State University. (August 1, 2007 - Present).

## **Professional Memberships**

American Physical Society. (August 1, 2004 - August 1, 2010).

## **Development Activities Attended**

Workshop, "Grant Writing workshop," SSU. (February 3, 2009).

Workshop, "Professional Skills Development for Women," American Physical Society.  
(March 9, 2008).

## **Awards and Honors**

## **TEACHING**

## **Teaching Experience**

### **Savannah State University**

ASTR 1001, Introduction to Astronomy, 2 courses.

MATH 1111, College Algebra, 1 course.

PHYS 1111, Introductory Physics I, 3 courses.

PHYS 1112, Introductory Physics II, 2 courses.  
PHYS 2211, Principles of Physics I, 5 courses.  
PHYS 2212, Principles of Physics II, 4 courses.

## **RESEARCH**

### **Presentations Given**

Zeng, Y. (Author), Yousuf, A. (Author & Presenter), 2009 ASEE annual conference & exposition, "Fluorescence Correlation Spectroscopy with Confocal Detection," ASEE, Austin, TX. (July 15, 2009).

Zeng, Y. (Author), "book "Bubbles and Mismatches in DNA Melting"," VDM publishing house. (February 1, 2009).

Zeng, Y. (Presenter), seminar talk, "Mismatch in DNA melting," Richard Stockton College of New Jersey, Pomona, NJ. (April 14, 2008).

Zeng, Y. (Presenter), seminar talk, "Mismatch in DNA melting," Seton Hall University, South Orange, NJ. (April 3, 2008).

Zeng, Y. (Presenter), seminar talk, "Mismatch in DNA melting," Flathead Valley Community College, Kalispell, MT. (May 1, 2007).

Zeng, Y. (Presenter), seminar talk, "Mismatch in DNA melting," Oklahoma School of Science and Mathematics, Oklahoma City, OK. (April 5, 2007).

Zeng, Y. (Presenter), 50th Annual meeting of Biophysical Society, "DNA melting," Biophysical Society, Salt Lake City, UT. (February 15, 2006).

Zeng, Y. (Presenter), American Physical Society Annual Meeting, "DNA melting," American Physical Society, Los Angeles, CA. (March 15, 2005).

Zeng, Y. (Presenter), 49th Annual meeting of Biophysical Society, "DNA melting," Biophysical Society, Long Beach, CA. (February 13, 2005).

### **Contracts, Grants and Sponsored Research**

#### **Grant**

Zeng, Yan (Co-Principal), Yousuf, Asad (Principal), "REEP: Renewable Energy and Entrepreneurship Partnerships," Sponsored by NCIIA, Private, \$30,000.00. (September 1, 2009 - September 1, 2011).

#### **Other**

Zeng, Yan.

## **SERVICE**

### **Public Service**

Committee Member, internal advisory committee for MSEIP grant, Savannah, GA. (July 1, 2009 - July 31, 2009).

judge, Savannah Ogeechee Regional Science and Engineering Fair, Savannah, GA. (February 22, 2009).

Committee Member, internal advisory committee for MSEIP grant, Savannah, GA. (October 1, 2008 - October 30, 2008).

scholar, Adopt-a-Physicist forum, Savannah, GA. (October 6, 2008 - October 24, 2008).

Member, MARC preceptor committee, Savannah, GA. (October 17, 2008).

judge, St. Andrew's school science fair, Savannah, GA. (October 16, 2007).

**Dr. Hua Zhao**  
Savannah State University  
Natural Sciences  
(912) 353-5290  
Email: zhaoh@savannahstate.edu

## **Education**

Ph D, New Jersey Institute of Technology, 2002.  
Major: Chemistry

MS, Tianjin University, 1997.  
Major: Chemical Engineering

BS, Tianjin University, 1994.  
Major: Chemistry

## **Professional Positions**

### **Professional**

Post-doc, Rutgers University. (September 1, 2002 - May 30, 2004).

## **Professional Memberships**

Member, American Chemical Society.

## **Development Activities Attended**

Workshop, "NIH RISE/MARC Technical Grant Writing Workshop," NIH. (February 17, 2010 - February 19, 2010).

Workshop, "Thermo Fisher GC-MS Training Workshop," Savannah State University, Title III. (June 26, 2007 - June 29, 2007).

Workshop, "University of Kentucky/NIH Internet Grant Writing Program," University of Kentucky and NIH. (May 7, 2007 - May 9, 2007).

Workshop, "Polymer Chemistry: Principles and Practice (A lecture-laboratory course),," Virginia Tech. (July 16, 2006 - July 21, 2006).

Workshop, "Training of CEM Microwave Reactor," CEM. (March 8, 2006 - March 9, 2006).

Workshop, "Fourier Transform Infrared Spectroscopy: A Hands-on Workshop," American Chemical Society. (August 29, 2005 - August 30, 2005).



Workshop, "QEM NSF-CAREER grant writing workshop," National Science Foundation. (March 11, 2005 - March 12, 2005).

Workshop, "FASEB NIH grantsmanship workshop," NIH. (November 4, 2004 - November 6, 2004).

## TEACHING

### Teaching Experience

#### Savannah State University

1212, Principle of Chemistry II Lab, 1 course.

2501, Organic Chemistry II, 2 courses.

4601, Polymer Chemistry Lab, 1 course.

CHEM 2511, Organic Chemistry II, 2 courses.

## RESEARCH

### Published Intellectual Contributions

#### Book Chapters

Zhao, H. (2010). *Microwave-Assisted Enzymatic Reactions in Aqueous Media*. Royal Society of Chemistry: Aqueous Microwave Chemistry.

#### Refereed Journal Articles

Zhao, H. High Transesterification Activities of Immobilized Proteases in New Ether-Functionalized Ionic Liquids. *To appear in Biotechnology Letters, In Press*.

Song, Z., Parker, K. J., Enoh, I., Zhao, H., Olubajo, O. (2010). Elucidation of Spermidine Interaction with Nucleotide ATP by Multiple NMR Techniques. *Magn. Reson. Chem.*, 48, 123-128.

Zhao, H. (2010). Fast Enzymatic Saccharification of Switchgrass after Pretreatment with Ionic Liquids. *Biotechnology Progress*, 26(1), 127-133.

Zhao, H. (2010). Migration of Reactive Trace Compounds from Novozym® 435 into Organic Solvents and Ionic Liquids. *Biochemical Engineering Journal*, 49(1), 113-118.

Zhao, H. (2010). New Ether-Functionalized Ionic Liquids for Lipase-Catalyzed Synthesis of Biodiesel. *Applied Biochemistry and Biotechnology*, 162(1), 13-23.

- Zhao, H. (2009). Effect of Ionic Liquid Properties on Lipase Stabilization under Microwave Irradiation. *Journal of Molecular Catalysis B: Enzymatic*, 57(1-4), 149-157.
- Zhao, H. (2009). Lipase Dissolution and Stabilization in Ether-Functionalized Ionic Liquids. *Green Chemistry*, 11(8), 1128-1138.
- Song, Z., Parker, K. J., Enoh, I., Zhao, H., Olubajo, O. (2009). Myosin Catalyzed ATP Hydrolysis Elucidated by <sup>31</sup>P NMR Kinetic Studies and <sup>1</sup>H PFG-Diffusion Measurements. *Anal. Bioanal. Chem.*, 395, 1453-1459.
- Zhao, H., Song, Z., Olubajo, O., Cowins, J. V. (2009). New Ether-Functionalized Ionic Liquids for Lipase-Catalyzed Synthesis of Biodiesel. *Appl. Biochem. Biotechnol.*
- Zhao, H. (2009). Regenerating Cellulose from Ionic Liquids for Accelerated Enzymatic Hydrolysis. *Journal of Biotechnology*, 139(1), 47-54.
- Zhao, H., Jones, C., Cowins, J. (2009). Lipase dissolution and stabilization in ether-functionalized ionic liquids. *Green Chemistry*, 11, 1128–1138.
- Zhao, H. (2008). Designing Enzyme-Compatible Ionic Liquids that Can Dissolve Carbohydrates. *Green Chemistry*, 10(6), 696-705.
- Song, Z., Sims, A., Eady, J., Zhao, H., Olubajo, O. (2008). Determining Nucleotide Acidity and Cation Binding Constants by <sup>31</sup>P NMR. *Canad. J. Anal. Sci. Spec.*, 53(2), 45-51.
- Zhao, H. (2008). Microwave-Assisted Esterification of N-Acetyl-L-Phenylalanine Using Modified Mukaiyama's Reagents: A New Approach Involving Ionic Liquids. *International Journal of Molecular Sciences*, 9(1), 33-44.
- Zhao, H., Song, Z., Cowins, J. V., Olubajo, O. (2008). Microwave-Assisted Esterification of N-Acetyl-L-Phenylalanine Using Modified Mukaiyama's Reagents: A New Approach Involving Ionic Liquids. *Int. J. Mol. Sci.*, 9, 33-44.
- Zhao, H. (2007). Nuclear Magnetic Relaxation of Water in Ionic-Liquid Solutions: Determining the Kosmotropicity of Ionic Liquids and its Relationship with the Enzyme Enantioselectivity. *Journal of Chemical Technology and Biotechnology*, 82(3), 304-312.
- Zhao, H., Song, Z. (2007). Nuclear Magnetic Relaxation of Water in Ionic-Liquid Solutions: Determining The Kosmotropicity of Ionic Liquids and Its Relationship with The Enzyme Enantioselectivity. *J. Chem. Techno. Biotechnol.*, 82(3), 304-312.

- Zhao, H., Olubajo, O., Song, Z., Sims, A. L., Person, T. E., Lawal, R. A., Holley, L. A. (2006). Effect of Kosmotropicity of Ionic Liquids on the Enzyme Stability in Aqueous Solution. *Bioorganic Chemistry*, 34(1), 15-25.
- Zhao, H. (2006). Effect of Kosmotropicity of Ionic Liquids on the Enzyme Stability in Aqueous Solutions. *Bioorganic Chemistry*, 34(1), 15-25.
- Zhao, H., Jackson, L., Song, Z., Olubajo, O. (2006). Enhancing Protease Enantioselectivity by Ionic Liquids Based on Chiral- or  $\omega$ -Amino Acids. *Tetrahedron: Asymmetry*, 17(10), 1549-1553.
- Zhao, H., Campbell, S. M., Jackson, L., Song, Z., Olubajo, O. (2006). Hofmeister Series of Ionic Liquids: Kosmotropic Effect of Ionic Liquids on the Enzymatic Hydrolysis of Enantiomeric Phenylalanine Methyl Ester. *Tetrahedron: Asy.*, 17(3), 377-383.
- Zhao, H., Campbell, S., Solomon, J., Song, Z., Olubajo, O. (2006). Improving the Enzyme Catalytic Efficiency Using Ionic Liquids with Kosmotropic Anions. *Chin. J. Chem.*, 24(4), 580-584.
- Zhao, H. (2006). Using Ionic Liquid [EMIM][CH<sub>3</sub>COO] as an Enzyme-'Friendly' Co-solvent for Resolution of Amino Acids. *Tetrahedron: Asymmetry*, 17(17), 2491-2498.
- Zhao, H., Jackson, L., Song, Z., Olubajo, O. (2006). Using Ionic Liquid [EMIM][CH<sub>3</sub>COO] as An Enzyme-"Friendly" Co-Solvent for Resolution of Amino Acids. *Tetrahedron: Asymmetry*, 17, 2491-2498.
- Zhao, H. (2005). Effect of Ions and Other Compatible Solutes on Enzyme Activity, and its Implication for Biocatalysis Using Ionic Liquids. *Journal of Molecular Catalysis B: Enzymatic*, 37(1-6), 16-25.

### Journal Articles

- Zhao, H. (2010). Methods for Stabilizing and Activating Enzymes in Ionic Liquids — A Review. *To appear in Journal of Chemical Technology and Biotechnology, In Press.* [www3.interscience.wiley.com/journal/123325194/abstract?CRETRY=1&SRETRY=0](http://www3.interscience.wiley.com/journal/123325194/abstract?CRETRY=1&SRETRY=0)

### Presentations Given

- Zhao, H. (Author & Presenter), 239th ACS National Meeting, "Improving the hydrolysis and derivatization of cellulose using ionic liquids," ACS, San Francisco, CA. (March 23, 2010).
- Song, Z. (Author & Presenter), Zhao, H. (Author), Parker, K. J. (Author), Enoch, I., Olubajo, O. (Author), 238th ACS National Meeting, "NMR Kinetic Studies of ATP Hydrolysis in Myosin System," ACS, Washington DC. (August 2009).

Zhao, H. (Author & Presenter), 236th ACS National Meeting, "Accelerating the enzymatic hydrolysis of cellulosic materials through regenerating them from ionic liquids," ACS, Philadelphia, PA. (August 21, 2008).

Zhao, H. (Author & Presenter), Baker, J. (Author), Song, Z. (Author), Olubajo, O. (Author), Peters, D. (Author), Goins, E. (Author), Crittle, T. (Author), 234th ACS National Meeting, "Can Ionic Liquids Dissolve Cellulose But Not Deactivate Enzymes?," ACS, Boston, MA. (August 2007).

Zhao, H. (Author & Presenter), 234th ACS National Meeting, "Can ionic liquids dissolve cellulose but not deactivate enzymes?," ACS, Boston, MA. (August 20, 2007).

Zhao, H. (Author & Presenter), 233rd ACS National Meeting, "Effect of ionic liquid hydrophobicity on the enzyme activity," ACS, Chicago, IL. (March 26, 2007).

Zhao, H. (Author & Presenter), Jackson, L. (Author), Song, Z. (Author), Olubajo, O. (Author), 232nd ACS National Meeting, "Enzyme Enantioselectivity in Aqueous Solutions of Novel Ionic Liquids Based on Chiral Amino Acids," ACS, San Francisco, CA. (September 2006).

Zhao, H. (Author & Presenter), 232nd ACS National Meeting, "Enzyme enantioselectivity in aqueous solutions of novel ionic liquids based on chiral amino acids," ACS, San Francisco, CA. (September 10, 2006).

Zhao, H. (Author & Presenter), 231st ACS National Conference, "Hofmeister series and individual ion contribution of ionic liquids to the enzyme activity and enantioselectivity," ACS, Atlanta, GA. (March 26, 2006).

Zhao, H. (Author & Presenter), 230th ACS National Meeting, "Enhance the enzyme stability through the addition of ionic liquids containing kosmotropic anions," ACS, Washington DC. (August 29, 2005).

Zhao, H. (Author), 32nd NOBCCChE Annual Conference, "Preparation of 'Green' Ionic Liquids and Evaluate the Enzyme Stability in Ionic Liquids," NOBCCChE, Orlando, FL. (March 22, 2005).

## **Contracts, Grants and Sponsored Research**

### **Grant**

Zhao, Hua (Co-Principal), "Developing Novel Derivatives of Betulinic Acid for Fighting HIV," Sponsored by NIH, Federal, \$79,696.00. (June 1, 2010 - May 31, 2012).

Zhao, Hua (Principal), "Enzymatic Esterification of Amino Acids in Ionic Liquids without Derivatization," Sponsored by Royal Society of Chemistry, Savannah State University, \$3,000.00. (January 1, 2009 - December 31, 2009).

Zhao, Hua (Principal), "Effect of Ionic Liquid Properties on the Enzyme Stabilization under Microwave Radiation," Sponsored by ACS Petroleum Research Fund, Savannah State University, \$45,000.00. (June 1, 2007 - August 31, 2009).

### **Awards and Honors**

Most Cited Paper 2006-2009 Award for Tetrahedron: Asymmetry, Elsevier. (2009).

RSC Research Award, Royal Society of Chemistry. (January 1, 2009).

### **Research in Progress**

"Developing Novel Derivatives of Betulinic Acid for Fighting HIV" (On-Going)

This is a sub-project of the NIH RIMI grant. The major objective of this project is to produce ionic liquid forms of betulinic acid with high water solubilities and high biological activities against HIV viruses.

## **SERVICE**

### **Department Service**

Committee Member, Student Advisement Manual Committee. (2006 - Present).

Committee Member, Department Grade Dispute Committee (for Dr. Shinemin Lin). (June 2008).

Committee Member, •Department Grade Appeal Committee (for Dr. George Tessema). (July 7, 2005 - July 15, 2005).

### **College Service**

Committee Chair, Post-tenure review policy committee. (January 2010 - Present).

Committee Member, Committee on the Civil and Environmental Engineering Technology (CEET) program. (September 2006 - Present).

### **University Service**

Committee Member, Library Media Committee. (January 2009 - 2010).

University Senate Service, Senate. (August 2007 - May 2009).

Committee Member, Librarian Search Committee. (August 2007 - November 2007).

**Professional Service**

Chairperson, ACS Coastal Georgia Local Section, Savannah, GA. (January 1, 2007 - December 31, 2007).

Member-at-large, ACS Coastal Georgia Local Section, Savannah, GA. (2004 - 2006).

# **Appendix D – Capital Project Allocation**

Inst.	Project	Total Bond Allocation	FY construction funding Scheduled	Total Project Cost (Escalated)	External Funds	State Funds Previously Allocated
AASU	Library Addition	17,000,000	2011	17,000,000		
AASU	Regional Health Professions Center	14,700,000	2012	14,700,000		
AASU	Gamble Hall Renovation	6,000,000	2013	6,000,000		
AASU	Data Center Expansion	1,500,000	2014	1,500,000		
AASU	Fine Arts Phase II	4,800,000	2014	4,800,000		
ABAC	Hist Tift Lewis Herring Renovation	7,300,000	2011	7,300,000		
ABAC	Academic Resource Center	32,900,000	2013	38,900,000	6,000,000	
ALSU	Ray Charles Fine Arts Center	27,300,000	2010	28,300,000	1,000,000	
AMC	Science Academic Building Addition	6,400,000	2012	6,400,000		
ASU	Wrightsboro Site Expansion	27,500,000	2012	27,500,000		
BC	Academic & Student Life Building	24,200,000	2012	33,000,000	8,800,000	
CGCC	Health Sciences Building	15,800,000	2010	15,800,000		
CGCC	Applied Technology Building & Renovation	8,700,000	2014	8,700,000		
CLSU	Science Building Renovation & Remediation*	9,000,000	2009	43,100,000		
CLSU	Science Building* (new construction)	33,500,000	2010	43,100,000	600,000	
CSU	Infrastructure - Computer I.S.	2,000,000	2011	2,000,000		
CSU	Classroom Laboratory Building	30,400,000	2012	30,400,000		
CSU	Visiting Artist Gallery	4,400,000	2014	5,050,000	650,000	
DC	Strategic Property Acquisition	1,600,000	2010	1,600,000		
DC	Instructional Building	20,200,000	2013	20,200,000		
DSC	Academic Building	19,900,000	2012	19,900,000		
DSC	Catoosa Building	6,600,000	2014	11,800,000	5,000,000	
EGC	Statesboro Facility	5,400,000	2010	5,400,000		
EGC	Biology Labs Renovation	700,000	2011	700,000		
FVSU	Academic Classroom Building (equip)	2,100,000	2009			20,464,000
FVSU	Historic Renovations*	14,900,000	2010	19,100,000	4,200,000	
GC	Nursing/Health Building	16,000,000	2010	16,000,000		
GC	Student Support and Activity Center*	13,500,000	2014	23,600,000	10,100,000	
GCSU	Historic Ennis Hall Renovation	10,600,000	2010	10,600,000		
GCSU	Historic Mayfair/Beeson Renovation	17,600,000	2013	18,000,000	400,000	
GCSU	Historic Baldwin County Courthouse Renovation	7,900,000	2014	9,700,000	1,800,000	



GGC	Infrastructure	11,100,000	2012	11,100,000		
GGC	Allied Health Building	30,200,000	2012	30,200,000		
GGC	Infrastructure	11,300,000	2014	11,300,000		
GGC	Academic Additions	14,100,000	2014	14,100,000		
GHC	Renovation Bldg D @ SPSU	6,100,000	2011	6,100,000		
GHC	Student Academic Center*	21,500,000	2012	26,000,000	4,500,000	
GIT	Innovative Learning Resource Center	60,000,000	2009	85,000,000	25,000,000	
GIT	Hinman Building Renovation	6,400,000	2010	10,400,000	4,000,000	
GIT	Infrastructure - Eco Commons Area A	4,500,000	2011	8,500,000	4,000,000	
GIT	Ivan Allen College Renovations	14,900,000	2013	19,100,000	4,200,000	
GIT	Infrastructure - North Campus Chiller	25,500,000	2013	25,500,000		
GIT	Howey Physics Building - Renov and Exp	34,100,000	2013	47,900,000	13,800,000	
GIT	GT Savannah Eng.Systems Discovery (Design Only)*	1,800,000	2014	42,000,000		
GPC	Academic Building Dunwoody	34,400,000	2011	37,900,000	3,500,000	
GPC	Academic Building Decatur	26,600,000	2013	34,100,000	7,500,000	
GPC	Academic Building Newton (Design Only)	3,100,000	2014	59,800,000	9,500,000	
GSC	Academic Facility	37,500,000	2010	37,500,000		
GSC	Addition to University Center	8,900,000	2014	8,900,000		
GSOU	Hendricks Hall Renovation	4,000,000	2009	5,000,000	1,000,000	
GSOU	Biology Building	38,600,000	2011	38,600,000		
GSOU	Renovation - Old Biology Building	7,300,000	2014	11,300,000	4,000,000	
GSOU	Multi-Purpose Classroom	21,800,000	2014	24,800,000	3,000,000	
GSU	Plaza Courtyard Redevelopment*	4,500,000	2011	5,500,000	1,000,000	
GSU	Humanities Building*	70,500,000	2011	70,500,000		
GSU	Academic Building	52,300,000	2014	66,500,000	14,200,000	
GSU/GPC	Alpharetta Center *	12,800,000	2009	12,800,000		
GWSU	Health and Human Sciences Building	16,800,000	2011	16,800,000		
KSU	Laboratory Addition - Science Building	19,000,000	2010	19,000,000		
KSU	Education Classroom Facility*	20,700,000	2012	28,700,000	8,000,000	
KSU	Infrastructure - Utility Expansion	6,400,000	2013	6,400,000		
KSU	Business Addition	16,800,000	2014	23,300,000	6,500,000	
KSU	Academic Learning & Advising Center	35,600,000	2014	40,700,000	5,100,000	
KSU	Health Sciences Building (equip)	4,500,000	2009		15,000,000	42,500,000
MCG	School of Dentistry	70,000,000	2009	123,000,000	48,000,000	5,000,000
MGC	Georgia Hall Renovation	500,000	2010	1,500,000	1,000,000	
MGC	Health Sciences & Technology Building	12,300,000	2012	12,300,000		
MSC	Professional Sciences Center (equip)	2,600,000	2009			26,961,000
MSC	Teacher Education Building @ Macon	25,400,000	2012	25,400,000		
MSC	Addition - Warner Robins Academic	11,500,000	2014	13,700,000	2,200,000	

NGCSU	Historic Renovations and Additions	16,400,000	2010	16,400,000		
NGCSU	Infrastructure - Fiber Optic Network	1,300,000	2013	1,300,000		
NGCSU	ALLC/AFRC Building/Convocation Ctr (Design Only)	2,500,000	2014	60,000,000	30,000,000	
SGC	Infrastructure - North Utility Loop	1,200,000	2011	1,200,000		
SGC	Engram Student Success Center*	8,300,000	2012	8,600,000	2,300,000	
SGC	Demolition Program	600,000	2014	600,000		
SKIO	Marine Operations Infrastructure	1,200,000	2009	1,200,000		
SKIO	Infrastructure	700,000	2013	700,000		
SPSU	Engineering Technology Center	38,000,000	2009	40,000,000	2,000,000	
SPSU	Construction Engineering Facility (Design Only)	2,500,000	2014	31,900,000	5,100,000	
SSU	Behavioral/Social Sciences Building (equip)	1,900,000	2009			12,700,000
SSU	Marine Biology and Environmental Sciences	2,600,000	2010	2,600,000		
SSU	Historic Camilla Hubert Hall Renovation	10,500,000	2013	10,500,000		
SSU	Replacement	24,600,000	2014	24,600,000		
UGA	College of Pharmacy (equip)	4,500,000	2009			37,500,000
UGA	Infrastructure - Gas Fired Boiler	6,400,000	2010	6,400,000		
UGA	Special Collections Library	31,400,000	2010	46,650,000	15,250,000	
UGA	Science Learning Center	48,100,000	2012	50,100,000	2,000,000	
UGA	Family and Consumer Sciences	71,400,000	2013	71,400,000		
UGA	International Programs Facility	6,300,000	2014	11,300,000	5,000,000	
UGA	Veterinary Medicine Teaching Hospital (Design Only)*	17,500,000	2014	109,900,000	34,400,000	
USO	Bond Funded MRR	35,000,000	2009			
USO	Bond Funded MRR	17,500,000	2010			
USO	Atlanta Region Access Investment*	5,500,000	2011	13,000,000	6,500,000	
USO	Atlanta Region Access Investment*	6,500,000	2013	15,000,000	8,500,000	
UWG	Northwest Campus Infrastructure*	2,000,000	2009	2,000,000		
UWG	Nursing Building	20,300,000	2011	20,300,000		
UWG	Biology Laboratory Expansion	22,700,000	2013	22,700,000		
UWG	Biology Lab Renovations (Design Only)	1,800,000	2014	25,400,000		
UWG	Library Renovation	11,100,000	2014	11,100,000		
VSU	Nevins Hall Math/CS Renovation*	4,500,000	2009	4,500,000		
VSU	Health Science Building	46,900,000	2011	49,200,000	2,300,000	
VSU	Renovation - Historic Ashley Hall	9,400,000	2014	9,400,000		
WC	Academic Addition	4,600,000	2011	4,600,000		
	Total	1,700,000,000			336,900,000	

