GRAMBLING STATE UNIVERSITY
RESEARCH CAPABILITIES

September 2016

Otto Meyers
Connie Walton
Established 1901
Mr. Richard Gallot Jr., President
Located in Grambling Louisiana
Accredited by the Southern Association of Colleges and Schools – Commission on Colleges
4863 students
Student body represents 43 states and 25 countries
Offer bachelors, masters, doctoral degree programs
MISSION

Grambling State University prepares graduates

• to compete and succeed in careers
• to contribute to the advancement of knowledge
• to lead productive lives as informed citizens
• to be committed to improving the quality of life of others
COLLEGE OF BUSINESS

- Accounting
- Computer Information System
- Economics
- Management
- Marketing

Accredited by Association to Advance Collegiate Schools of Business
COLLEGE OF EDUCATION & PROFESSIONAL STUDIES

- Social Work, BSW, MSW
- Nursing, MSN, Nurse Practitioner
- Mass Communication, BA, MA
- Criminal Justice, BS, MS
- Teacher Preparation, BA, MA, Ed.D.
- Kinesiology, BS
- Leisure Studies, BS
- Sports Administration MS

ACCREDITATIONS

Accreditation Council of National Recreation and Park Association
Council on Social Work Education
Accreditation Commission for Education in Nursing
Accrediting Council on Education in Journalism and Mass Communications
Council for the Accreditation of Educator Preparation (formerly NCATE)
National Recreation and Park Association
COLLEGE OF ARTS & SCIENCES

LIBERAL ARTS

• Child Development
• English
• History
• Music
• Political Science
• Psychology
• Visual and Performing Arts
• Social Sciences- MA
• Public Administration -MPA

ACCREDITATIONS

Network of Schools of Public Policy, Affairs, and Administration
National Association of Schools of Music
National Association of Schools of Theater
COLLEGE OF ARTS & SCIENCES

STEM (BS Level)

- Biology
  - Environmental
- Chemistry
  - Forensic
  - Professional
- Computer Science
- Engineering Technology
  - Drafting Design
  - Electronics
- Mathematics/Physics
  - Material Science
  - Biomedical

ACCREDITATIONS
Accreditation Board for Engineering & Technology-ETAC
Accreditation Board for Engineering & Technology-CAC
Committee on Professional Training-American Chemical Society
CENTERS & INSTITUTES

• Entrepreneurship and Innovation Institute
• Center for Mathematical Achievement In Science & Technology
The mission of the Entrepreneurship and Innovation Institute is to proactively promote an entrepreneurial spirit and innovative culture at Grambling State University and the communities it serves. Hence, empowering GSU students to become business leaders who drive positive impact in their communities as entrepreneurs, both for-profit and social entrepreneurship.

Selected to participate in Delta Regional Authority’s Entrepreneurship Ecosystem Program
• 2nd cycle of funding from National Science Foundation (NSF) HBCU-Undergraduate Participation Program

• Mission of increasing STEM majors and graduates at undergraduate level by implementing creative strategies that address STEM education at GSU and K-12

• Increase research opportunities for faculty and students

$4.4 million in funding received from NSF for this Center, 2005-2017
### CONTRACT/GRA NT FUNDING RECEIVED 2012-2015

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CORE COMPETENCIES

236118, 512290
541711, 541712
711120
• Toxicogenomics

• Gene Interactions

• Genetic and electrophysiological techniques to Drosophila photoreceptors and synaptic transmission

• Pharmacognosy

• DNA Replication, Damage and Repair

• Mechanisms of Cancer Repair
• Cognitive Radio Network Security
• High Performance GP-GPU Computing in Federated Hadoop Systems
• Deep Learning & Anomaly Detection
• Game Models
• Backpropagation Models-Neural Networks
• Cloud Data Security
• R-Hadoop
• High Performance Polymer Synthesis
• Synthesis of Liquid Crystalline Materials
• Preparation of Composites
• Characterization of Nanoporosity in Polymers
• Vacancy defects in Metals
• Micro-hardness Analysis
• Magnetization Studies
• Crystal Phase Composition
Positron Lifetime Spectroscopy, Differential Scanning Calorimeter/Thermal Gravimetric Instrument, Thermomechanical Analysis Instrument, FTIR’s, UV Visible Spectrophotometer, Atomic Absorption Spectrometer, Gas Chromatography/Mass Spectrometer, Continuum FTIR Microscope
MATERIAL SCIENCE INSTRUMENTATION

FTIR, UV Vis, AA, GC/Mass Spectrometer

Polarizing Optical Microscope Equipped with Hot Stage

Vibrating Sample Magnetometer

Scanning Electron Microscope (SEM)
Energy Dispersive X-ray Spectrometer (EDXS)
for Elemental Spot Analysis
MATHEMATICAL BIOLOGY

Deterministic Mathematical and Stochastics Models to Study the Spread of Infectious Diseases

- Malaria
- Typhoid
- Zika Virus

ENGINEERING TECHNOLOGY

Construction Management
Computer-Aided Drafting Design
Architectural Drafting Design
Electronics Engineering Technology
ENGINEERING TECHNOLOGY FACILITIES

3 D Printers

Cisco Academy Lab

Architectural Design Lab

Circuit Analysis/Design Lab

Programmable Logic Control Lab
MOLECULAR MODELING

- Quantum Mechanics and Monte Carlo Based Computational methods to Study Charge Transport and Impact on Structural Properties of Polymers

- Study of Molecular Transport in Nanostructures using Stochastic Models
PAST AND CURRENT PERFORMANCE
• NSF-Experimental Program to Stimulate Competitive Research (EPSCoR): Consortium for Innovation in Manufacturing and Materials 2015 – 2020, $400,000, Dr. N. Seetala, Dr. P. Derosa, Co-PI’s

• NSF HBCU- Undergraduate Participation (UP): Center for Mathematical Achievement In Science & Technology 2005- 2017, $4.4 Million, Dr. C. Walton PI

• NSF S-STEM: Increasing the number of STEM graduates, 2007-2011, $460,000, Dr. C. Walton PI

• NASA Minority University Research and Education Project (MUREP) Educator Program Participant - Minority participation for future NASA workforce: Curriculum improvement, 2-year to 4-year colleges bridge, University-NASA research centers collaboration
  2009-2014, $400,000, Dr. N. Seetala, PI

• Polymerizable Monomer Reactant  (subcontract with Clark Atlanta University, John Glenn Research Center)
  2003-2008, $244,000, Dr. D. Hubbard, PI

• Synthesis of Materials that Exhibit Nonlinear Optic Behavior, Subcontract with University of New Mexico-Highlands
  2000-2003, $30,000, Dr. C. Walton, PI

• Synthesis of a thermally stable polyamide for Nonlinear Optic Applications
  1998-2000 , $240,000, Dr. C. Walton, PI
• DOE-Energy Frontier Research Center (EFRC): Center for Atomic Level Catalyst Design of Nano-Catalysts, 2009-2014, $100,000, Dr. N. Seetala, PI

  Role of microstructure/nanoporosity and atomic structure in activation, deactivation, and temporal stability of catalyst/support systems for fuel conversion.

• Development of low cost membranes for H₂/CO₂ separation in WGS reactors 2007-2011, $200,000, Dr. N. Seetala, PI

  Synthesis of low temperature bimetallic nanocatalysts for Water Gas Shift reaction (WGS) for hydrogen production from CO and steam mixture; and develop low-cost metal (Nb/Ta)/ceramic membranes for H₂ separation and Cellulose Acetate membranes for CO₂ separation
LOUISIANA BIOMEDICAL RESEARCH NETWORK

2015-2017- Award Period, $205,137

• **Project I** - Research focuses on the toxicity of PCP to the extent that it may alter gene expressions in hepatocyte culture. The goal is to identify stress-response genes that contribute to cell proliferation and programmed cell death in PCP-treated TIB-73 mouse hepatocytes. Dr. W. Dorsey P.I.

• **Project II** - Research is in collaboration with Colorado State University and the Pennington Biomedical Research Center in Baton Rouge Louisiana. The team is trying to better understand the cellular mechanisms that lead to Non-alcoholic fatty liver disease development and progression, Dr. P. Kim P.I.
AIR FORCE RESEARCH LABORATORY

2005- 2020- Award Period
$3.8 Million

• Design and Implementation of a Cognitive Radio Cloud Network, Dr. Y. Reddy, PI

• Robotics Training for High School Students & Teachers, Dr. Y. Reddy, PI

• High Performance GP-GPU Computing in Federated Hadoop Systems, Dr. Y. Reddy, PI

• Advanced Ceramic Materials Processing and Characterization Using Position Lifetime Spectroscopy, SEM, Micro-hardness, and FT-IR, Dr. N. Seetala
AIR FORCE

• Advanced Nano-Reinforced Composite Materials- Air Force Research Laboratory, 2010-2012, $120,000, Dr. N. Seetala, PI

  Developed and validated structural protection systems that incorporated nanomaterials in polymers; and developed nanocomposites for body armor protection material

• Synthesis of Polyimides to be used in the Fabrication of a Low Driving Voltage Electro-optic Modulator, USAF, Office of Scientific Research 2001-2004, $260,000, Dr. C. Walton, PI

  Synthesized monomers/polyimides, characterization of structure & thermal behavior, characterization of electro-optic behavior
Enhancement of Biomedical Research Infrastructure at Grambling State University, Congressional Directed Funding (Managed by U.S. Dept. of Education), 2003-2004, $149,015, Dr. C. Walton PI

Curriculum Development and Equipment Upgrades
USDA-RURAL DEVELOPMENT

- Grambling Housing Development Program 2006-2007, $192,705.00, Dr. B. Nwokolo, PI
- Grambling Housing Development Program 2007-2008, $273,799, Dr. B. Nwokolo, PI
- Simsboro/Grambling Housing Rehabilitation Program 2009-2010, $275,255, Dr. B. Nwokolo, PI
- Village of Simsboro Housing Preservation Project 2013-2014, $200,000, Dr. B. Nwokolo, PI

Projects renovated single family homes for low income residents
Grambling Neighborhood Development Program 2006-2008, $1,173,876, Dr. B. Nwokolo, PI

Completed community development projects that included providing special programs for Hurricane Katrina and Hurricane Rita Evacuees
NATIONAL INSTITUTES OF HEALTH

- Minority Access for Research Careers (MARC), $1,652,570, 2013-2018, Dr. M. Himaya, PI

- Research Initiative for Scientific Enhancement (RISE) Program $1,997,697, 2004-2015, Dr. F. Ifeanyi, PI

Training opportunities for STEM Students to enhance preparedness for success in a Ph.D. program in Biomedical Sciences - MARC (Juniors & Seniors) RISE (Sophomores)

MARC funded continuously since 1998
FUTURE DIRECTION

• Expand contracts obtained (build upon the success we have had with Air Force Contracts)

• Expand our Cybersecurity/Big Data Footprint

• Complete an application with National Geospatial Intelligence Agency to obtain recognition as a Geospatial Sciences academic center of excellence
Otto Meyers, III
Interim VP for Research, Advancement &
Economic Development
GSU Box 4236
Grambling LA 71245
(318)-274-2217
(318)-274-3330 (fax)
meyerso@gram.edu