The Department of Physics offers a spectrum of courses reflective of both the integral character of physics in the liberal arts curriculum and its essential role in engineering and technology, and which recognize that the discipline of physics is fundamental to the understanding of all natural phenomena. The courses offered have been designed to:

• Assist students in satisfying the general education requirement;
• Support the preparation of students majoring in biology, chemistry, computer science, mathematics, and engineering; and
• Prepare students for graduate study in physics.

Although the Department has a multipurpose role in the curriculum of the College, the primary objective is to prepare students for graduate study and ultimately successful careers in physics. The Department recognizes and accepts its responsibility to address the under representation of African-Americans in science and engineering. Historically, this has been and remains a foremost responsibility in our program.

### Engineering

#### Job Types

**ANY ENGINEERING DISCIPLINE**
- Production
- Sales and Marketing
- Management
- Consulting
- Research and Development
- Teaching
- Law

#### Where to find them
- Industry
- Business
- Federal, state, and local government
- Colleges and universities

#### Ways to Prepare

- Obtain related experience through co-op or internships for business/industry-related career.
- MBA degree provides best opportunities in technical management.
- Obtain Ph.D. for optimal teaching and research careers.
- Develop strong verbal and written communication skills.
- Learn federal, state, and local government job application procedures.

#### Job Types

**AEROSPACE**
- Propulsion
- Fluid Mechanics
- Thermodynamics
- Structures
- Celestial Mechanics
- Acoustics
- Guidance and Control

#### Where to find them
- Aircraft, guided missile, and space vehicle industries
- Communications equipment manufacturers
- Commercial airlines
- Federal government departments: Defense and National Aeronautics and Space Administration (NASA)
- Business and engineering firms

#### Ways to Prepare

*Discipline uses cutting edge technology to deal with challenges of aeronautics, space, mass transportation, environmental pollution, and medical science.*

- Keep abreast of status of federal funding for defense and space programs.
- Seek co-op opportunities.
- Develop effective verbal and written communication skills.
- Learn to work well within a team.
The Department offers programs of study in physics, applied physics, and a dual degree engineering program. The majors in physics and applied physics lead to the bachelor of science degree in these disciplines and the dual degree engineering program leads to a bachelor of science degree in an engineering field and a bachelors degree from Morehouse in a field dependent on the choice made by the student. Although the focus of the physics and the applied physics programs is preparation for graduate study in these fields, these programs provide excellent preparation for engineering.

**Ways to Prepare**
A broad, basic engineering discipline with a close relationship to the environment, food production, and agricultural productivity.

- Participate in internship or co-op programs.
- Acquire strong computer skills.
- Learn a foreign language for work in foreign Service.
- Develop strong math and problem solving skills.

**Job Types**

<table>
<thead>
<tr>
<th>BIOSYSTEMS ENGINEERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Resources</td>
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<tr>
<td>Soil and Water Conservation</td>
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<td>International Consulting</td>
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<tr>
<td>Environmental Control</td>
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<tr>
<td>Agricultural Structures</td>
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<tr>
<td>Power and Machinery</td>
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<tr>
<td>Electronic Systems</td>
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<tr>
<td>Food Engineering</td>
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<tr>
<td>Genetic Engineering</td>
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<tr>
<td>Engineering Technology</td>
</tr>
</tbody>
</table>

**Where to find them**

- Technological agricultural industries
- Land grant universities:
  - Experimental farm stations
  - Research laboratories
- Consulting firms
  - Equipment design, testing, and manufacturing firms
- Equipment and food industries
  - including: processing, packaging, and storing
- Quality control for food, feed, fiber, etc.
- Biotechnology research firms
- Foreign Service

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**BIOMEDICAL**
Bioengineering
- Design
- Development
- Manufacturing
Medical Engineering
- Instrumentation
- Materials
- Diagnostic-Therapeutic Devices
- Artificial Organs
- Medical Equipment
Rehabilitation Engineering
Bio-environmental Engineering

**Ways to Prepare**

Discipline combines engineering and human anatomy to develop and maintain medical and healthcare systems and equipment.

- Develop strong team work skills.
- Many positions require a graduate or professional degree.
- Serves as a good background for medical school.

**Where to Find Them**

- Manufacturers of medical and surgical devices
- Hospitals and healthcare facilities
- Federal government:
  - Regulatory agencies
  - Veteran’s Administration
  - National Institutes of Health
  - National Aeronautics and Space Administration
- Industry
  - Research facilities of educational and medical institutions
### Job Types

**CHEMICAL**
- Administration
- Design and Construction
- Project Engineering
- Control Systems
- Field Engineering
- Process Engineering
- Operations/Production
- Environmental and Waste Management
- Development
- Design

**CIVIL**
- Structural
- Urban and Community Planning
- Construction
- Environmental
- Water Resources
- Transportation and Pipeline
- Geotechnical
- Photogrammetry, Surveying and Mapping
- Materials

### Where to Find Them

**CHEMICAL**
- Independent research institutes
- Consulting organizations
- Chemical industry including:
  - Agricultural chemicals
  - Plastics
  - Industrial chemicals
  - Petroleum
  - Pharmaceutical
  - Cosmetic
  - Food processing
  - Atomic energy development
  - Environmental
- Federal government including:
  - Department of Energy
  - Environmental Protection Agency
- Manufacturing plants including automotive, air plane, paper, microelectronics, textiles, metals, rubber, food, and beverage

**CIVIL**
- Construction industry
- Engineering or architectural firms
- Utility companies
- Oil companies
- Telecommunications businesses
- Manufacturing companies
- Consulting firms
- Railroads
- State and federal government agencies

### Ways to Prepare

#### CHEMICAL
*Combines science of chemistry with discipline of engineering to solve problems and develop efficiency.*
- Develop exceptional interpersonal skills.
- Acquire technical work experience during college years.

#### CIVIL
*Broad discipline of “doers” providing service to the community through development and improvement. Works extensively with other professionals involved with the community. Provides opportunity to work outdoors.*
- Learn to work well within a team.
- Develop strong communication and interpersonal skills.
- Develop physical stamina for outdoor work.
- Get experience in organizing and directing workers and materials.
- Ability to visualize objects in three dimensions is helpful.
- Demand has remained steady due to broad nature of discipline.
- States may require licensing or registration.
### Job Types

**ELECTRICAL/COMPUTER**
- Power Electronics
- Power Systems
- Communications
- Electronics
- Control Systems
- Digital Signal Processing
- Microelectronics
- Image Processing & Robotics
- Computer Engineering
- Plasma Engineering
- Computer Vision

### Where to Find Them

Manufacturing firms and industry including:
- Aeronautical/Aerospace
- Automotive
- Business machines
- Professional and scientific equipment
- Consumer products
- Chemical and petrochemical
- Computers
- Construction
- Defense
- Electric utilities
- Electronics
- Environmental
- Food and beverage
- Glass, ceramics, and metals
- Machine tools
- Electrical/Computer, Continued
- Mining and metallurgy
- Nuclear
- Oceanography
- Pulp and paper
- Textiles
- Transportation
- Water and wastewater

Public utilities
Federal government including:
- Armed forces
- National Aeronautics and Space Administration (NASA)
- National Institutes of Health
- Bureau of Standards
- Department of Defense
- Various commissions

Consulting firms
Free-lance consulting

### Ways to Prepare

*A field in touch with a wide and growing range of applications such as high speed and wireless communication, exploration of outer space, and a revolution in medical diagnosis and treatment.*

- Develop effective verbal and written communication skills.
- Gain experience in team work.
- Acquire capacity for details.
- Develop interpersonal skills.
- Obtain research experience.
## Job Types

**INDUSTRIAL**
- Operations Research
- Applied Behavioral Science Systems
- Manufacturing Management
- Information Engineering
- Computer Systems Design and Development

**Where to Find Them**
- Manufacturing industries
- Accounting firms
- Retail distribution organizations
- Banks and financial institutions
- Hospitals and healthcare organizations
- Educational and public service agencies
- Transportation industries
- Construction industries
- Public utilities
- Electrical and electronics machinery industries
- Consulting firms

### Ways to Prepare

*Discipline links management and operations by improving productivity through a “big picture” approach; serves human needs and works with people.*

- Take courses in psychology, sociology and anthropology to learn more about people and how they behave.
- Earn an MBA for advancement in management or administration.

## Job Types

**MATERIAL SCIENCES & ENGINEERING**
- Metallurgy
- Ceramics
- Plastics/Polymer
- Composites
- Research
- Extractive
- Process
- Applications
- Management
- Sales
- Service
- Consulting

**Where to Find Them**
- Materials producing companies
- Manufacturing companies including automobiles, appliances, electronics, aerospace equipment, machinery, medicine
- Service companies including airlines, railroads, and utilities
- Consulting firms
- Government agencies: Department of Defense, National Aeronautics Space Administration (NASA)
- Research institutes
- Publishers

### Ways to Prepare

*Studies properties of various types of materials and how they are made and behave under different conditions.*

- Many positions require a graduate degree.
- Some areas benefited by additional study in business administration, medicine, management and/or law.
- Develop good communication skills.
- Gain laboratory and research experience as an undergraduate.
**Job Types**

**MECHANICAL**  
Mechanical Power Generation  
Internal Combustion Engines  
Jet Engines  
Steam Power Plants  
Rockets  
Energy Utilization and Conservation  
Thermal/Fluids  
Thermodynamics  
Environmental Control  
Refrigeration  
Instrumentation and Control  
Machine Sciences  
Mechanical Design  
Manufacturing and Production  
Robotics  
Operation and Maintenance  

**Where to Find Them**  
Transportation  
Automotive industry, aerospace industry, military laboratories  
Utilities  
Steam driven electric power stations  
Equipment Design  
Plants  
Nuclear power stations  
Electronics industry  
Petro-Chemical  
Drilling & production, plant operations  
Manufacturing  
Consumer products, chemical products, farm equipment, industrial equipment, paper and wood products, textile equipment  
Consulting engineering firms  

**Ways to Prepare**  
*Takes broad outlook on solving complex problems. Involves design, development and production. Keeps pace with technology. Acts as an interface between society and technology.*  
- Obtain related experience through internships or co-op.  
- Take additional courses in area(s) of interest.  
- Develop strong interpersonal and communication skills.

**Job Types**

**ENVIRONMENTAL**  
Design  
Planning  
Operations  
Administration  
Regulations  

**Where to Find Them**  
Private industry and businesses involved with air pollution control, industrial hygiene, radiation protection, hazardous waste management, toxic materials control, water supply, storm water and wastewater management, solid waste disposal, public health, and land management  
Private engineering consulting firms  
Construction firms  
Research firms  
Testing laboratories  
International organizations  

**Ways to Prepare**  
*Discipline plays vital role in reducing toxicity and pollution of water, ground and air for a better quality of life for all living things.*  
- Consider a master’s degree for advancement.  
- Foreign language ability beneficial for international work.
Job Types

**NUCLEAR**
- Electric and gas utility companies
- Guided missile and space vehicle companies
- Engineering consulting firms
- Business services including medical industry
- Manufacturers of nuclear power equipment
- Research facilities
- Military services
- Defense manufacturers

Where to Find Them

**Ways to Prepare**

*Discipline studies basic components of neutrons, protons, electrons and all matter; deals with inanimate substances.*

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Job Types

**ENGINEERING SCIENCE & MECHANICS**
- Engineering Mechanics
- Biomedical Engineering
- Computational Mechanics
- Engineering Materials

Where to Find Them

Industry
- Manufacturing
- Research organizations

**Ways to Prepare**

*Interdisciplinary program with broad training in engineering science, mathematics, and physical or biological science.*

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The field of engineering is constantly changing, and the information listed below does not exhaust possible career options. Be sure to speak with your department chair or academic advisor for further guidance on course selections, as well as career planning.