South Carolina is among the top nuclear power producers in the United States, ranking third in nuclear capacity and nuclear generation.

The State also has an especially significant role in low level nuclear waste disposal. Consequently, there is a major need for trained personnel skilled as Health Physics/Radiation Control technicians within the state of South Carolina. To address the demand for such skilled workers, a partnership was formed between Orangeburg-Calhoun Technical College and South Carolina State University to develop a coordinated health physics career track for health physics technicians (associate degree) with a clear transfer pathway without loss of credit from the two-year college to the four-year university health physics managers program (baccalaureate degree). As a result, the development of such a program will accomplish a unique 2+2 program from health physics technician to health physics manager.

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In view of the current need for trained personnel skilled as radiation control and health physics technicians, Orangeburg-Calhoun Technical (OCtech) College and the South Carolina State University (SCSU) Nuclear Engineering Program (NEP) has formed a partnership to create a unique curriculum that focuses on radiation protection and control. For students achieving an associate degree, the program will not only focus on Radiation Protection Technology (RPT) but will also complement their skills with a well-developed and existing electronics instrumentation component at OCtech. Students interested in obtaining their baccalaureate degree in the health physics managers program will not only have an easy transfer from the two-year college to the four-year university, but they will be equipped to undertake advanced radiation science courses being taught at SCSU. Advanced coursework will be necessary for a Health Physics Technician to acquire the skills to become a Health Physics Manager. The SCSU program is the only such program being developed in the state of South Carolina (SC).

Electronics Instrumentation Technology Program

The Electronics Instrumentation Technology (EIT) program option is a well established curriculum at OCtech within the Electronics Engineering Technology Program. Instrumentation is the study of measurement and control of key parameters such as temperature, flow, pressure, level, and analytical devices that must operate automatically. These process control systems are central to the operation of such facilities as chemical plants, food processing plants, air and pollution control agencies, petroleum refineries, and power production facilities.

The EIT program prepares students for this field through a rigorous 2-year lab intensive program that includes the study of:

- AC and DC circuits
- Digital electronics
- Physics
- Engineering Fundamentals

Interested graduates of the EIT program may also pursue certification in the RPT program.

SCSU Radiation Sciences Laboratory

Under the supervision of Dr. Kenneth Lewis, the applied radiation sciences lab at SCSU is currently and competently equipped for lab training courses and scientific research. The laboratory is home to brand new state-of-art nuclear detectors:

- Nine sets of Saint-Gobain Crystals N210/NBC Geiger-Muller tubes coupled with Spectrum ST360 Radiation Counters
- Nine sets of Canberra NaI(Tl) detectors operated by Genie-2000 system
- A Canberra Germanium detector for gamma-spectroscopy
- A Canberra Alpha analyzer for alpha-spectrometry
- Two Triathler portable 425-034 Liquid Scintillation Counters
- A Perkin-Elmer Tri-Carb© 2900 liquid scintillation analyzer operating with QuantaSmart instrument software

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START YOUR HEALTH PHYSICS CAREER TODAY!
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**PRIMARY OBJECTIVES:**

- Develop nine comprehensive, competency-based instructional RPT courses to be offered at OCtech for first and second year students
- Collaborate with industry partners to develop a 10 week culminating industry practicum
- Develop 3 Summer I courses to be taught at SCSU in order to leverage the University’s state-of-the-art laboratory facilities
- Implement the program with final approvals from oversight agencies

**CURRENT WORK:** Significant progress to the joint RPT program was made during the latter half of the 2010 year. Starting with the development of three curricula which center around electronic instrumentation, radiochemistry or pure radiation protection and control. The curricula, with built-in RPT certificates, were designed to offer the opportunity to existing students already registered or who have recently graduated from the OCtech instrumentation program and also to attract new students interested in a unique practical RPT program. All three programs were revealed at the first OCtech and SCSU RPT Industry Advisory Council (IAC) held in October 2010. Advisors in attendance ranged from the industrial and academic fields with significant representation from local South Carolina companies such as GEL Labs, Inc.; Risk Assessment Corporation; and Savannah River Nuclear Solutions, LLC.

**FUTURE WORK:** OCtech and SCSU are continuing to develop courses that will meet the criteria for the RPT uniform curriculum. Continued support from industry and health physics professionals will be significantly needed to sustain the program. Goals include:

- Recruit outstanding students in the state of SC who may be interested in the RPT program
- Complete course development for existing and new RPT courses with the intention of gearing our students to be prepared for the NRRPT examination
- Continue to build and maintain industrial support for our biannual IAC meetings, summer internships and research projects

For a more detailed look at our existing curricula feel free to contact the authors of this program summary.

**QUICK LOOK AT THE CURRICULA:**

**Health Physics Technician**

**Electrical Engineering Technology Track**

College Algebra; College Trigonometry; DC Circuits; AC Circuits; Active Devices; Introduction to Electronic Instrumentation I and II; Programmable Controllers; Physics I and II; Fundamentals of Industrial Instrumentation Procedure; Principles of Instrumentation; Computers and PLC’s in Instrumentation; Engineering Programming; English Composition I; Professional Communications; General Psychology; Humanities Directed Elective; Introduction to Radiation and Protection, Safety and Fundamentals; Radiation Monitoring and Exposure Control; Radiation Dosimetry; Radiation Monitoring: Research in Radiation Protection; Radiation Protection I; and Radiation Protection Technology Internship. This is a 83 Semester Hour program.

**Health Physics Technician**

**Electrical Engineering Technology Track with the Radiochemistry Option**

All courses listed above except General Organic Biochemistry; Introduction to Radiochemistry; and Contamination Control and Incident Prevention courses replace Radiation Monitoring; Computers and PLC’s in Instrumentation; and Fundamentals of Industrial Instrumentation Procedure. This is a 83 Semester Hour program.

**Health Physics Certificate**

OCtech’s RPT certificate program provides training in the many processes of radiation protection and safety. From this curriculum, students will acquire the necessary skills, knowledge, and experience for employment in radiation protection technician occupations. The certificate program includes two certificates totaling 21 and 20 semester hours. It is designed for current students in the electronics instrumentation technology program and or recent graduates. RPT courses will include: Introduction to Radiation and Protection, Safety and Fundamentals; Radiation Monitoring and Exposure Control; Radiation Dosimetry; Research in Radiation Protection; Radiation Protection I; General Organic Biochemistry; Contamination Control and Incident Prevention; Nuclear Mathematics and Theory; Radiological Safety and Response; Radioactive Materials and Handling; and Radiation Protection Technology Internship.

**Health Physics Technician Degree**

This degree will be a pure health physics track and comprises core RPT courses (as suggested above). It is still in the developmental stages, and approval for this degree is pending.