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1. **Purposes and Goals**

The goal of the A.A.S. in Radiologic Technology will be to prepare radiologic technologists who are highly competent

Brooklyn and many others as well. Mary Perry, President of the New York Society of Radiologic Technology Educators, has been brought in to consult on the development of this program.

C. Related College Offerings

The College administration has demonstrated a significant interest in programs of this type by its recent commitment to associate degree programs for surgical technologists and physical therapist assistants. The College has a long-standing A.A.S. in Nursing which has 42 faculty members, 15 of whom are full-time. Each of these programs has its own office space, classrooms and learning laboratories. The campus also offers programs in community and mental health, therapeutic recreation and transfer options to baccalaureate health professions programs, and is developing a biotechnology program.

In its July 2006 *Report of Institutional Goals* to CUNY, Kingsborough made a commitment to target new certificate and degree programs in health occupations. Currently, Letters of Intent are being prepared for five other health professions programs. These are: Veterinary Technician, Occupational Therapy Assistant, Respiratory Therapist, EMT-Paramedic and Pharmacy Technician.

The College is pursuing the creation of a new academic department which will be responsible for the A.A.S. in Radiologic Technology as well as the five other new health-technician programs. During this initial stage between the Letter of Intent and CUNY approval to develop a full proposal, and until a new department is established, the Department of Nursing has taken responsibility for the development of the A.A.S. in Radiologic Technology.

2. Need for the Curriculum

The use of diagnostic imaging services has increased dramatically over the years yet the number of registered technologists has remained stable. As a result, technologists often work longer shifts. According to the American Society of Radiologic Technologists, the general population undergoes 130 diagnostic imaging procedures annually per 100 people. By 2020, the annual number of imaging procedures is expected to grow by 140%. The U.S. Bureau of Labor Statistics predicts that the nation will need an additional 15-20% more radiographers in the next three to four years.

Exhibit 23 of *The Health Care Workforce in New York State, 2004: Trends in the Supply and Demand for Health Worker* was culled from an analysis of a survey of sample voluntary and public hospitals throughout New York State, including New York City and Long Island. Of those surveyed, 84 % reported difficulties in recruiting and 58% reported facing a shortage in radiologic technologists.

The need for more radiologic technology programs is urgent.

Recruitment and Retention Difficulties Reported by Hospitals in New York State

Moreover, the shortage of these health workers is evident locally. In a newspaper article titled, "Rad Techs are in short supply...." (Newsday, October 19,2003), the local shortage forces many radiologic technologists to work long hours and multiple shifts. All of the aforementioned factors support the development of this program.

Although there is a growing need for advanced technology (such as Magnetic Resonance Imaging), the demand for less expensive diagnostic procedures will also increase. Insurance companies are trying to reduce or at least contain healthcare costs and physicians are compelled whenever possible to order less expensive diagnostic tests such as X-Rays. Second, many elderly patients cannot be exposed to the more advanced technology for diagnostic purposes because of its contraindication to implanted life-saving devices. Third, according to the American Society of Radiologic Technologists, as the average age of radiologic technicians is now fifty, retirements in the next decade will come at the same time patient demand for diagnostic procedures is increasing.

3. Students

Kingsborough administration, faculty and counseling staff universally agree in the principle of “If we build it; they will come”. Brooklyn has a population of over 2.2 million and, certainly, the population served by Kingsborough is large enough to expect a strong positive reaction to educational opportunities at this level for this rewarding profession. Applicant pools for the extant programs are excellent at present.

Enrollment at Kingsborough Community College (excluding College Now) reached 11,790 students in the spring 2005 semester. In spite of the interest of significant numbers of these students in allied health career education, many do not have access due to the limited number of programs and program seats available. Therefore, there is a need to introduce additional, equally viable career programs.

Meetings with representatives from the 1199SEIU League Training and Upgrading Fund indicate significant interest in a new Radiologic Technology program for its members who are currently employed in health care. The proposed program will address specific scheduling issues presented by these students and non-traditional course scheduling such as on evenings and weekends can be incorporated into the design of the program.

Clinical experiences can be scheduled throughout the week and during day, evening and night shifts as well as on weekends to accommodate student scheduling needs.

Department of Student Development personnel has enthusiastically endorsed this proposed program and has agreed to schedule the shadowing of practicing professionals prior to implementation to strengthen their understanding of the work environment and scope of practice for radiologic technologists. This will better equip them to help potential students select the right profession and may increase retention in the program.

Bronx Community College, New York City Technical College and Hostos Community College offer the A.A.S. in Radiologic Technology. Other programs are offered by Methodist Hospital, Long Island College Hospital, Harlem Hospital and St. Barnabas Hospital.

4. Curriculum

The curriculum is designed to prepare students who will succeed in earning State and national credentialing and are ready to work anywhere in the United States as highly qualified radiologic technicians. The curriculum includes the science of human anatomy all health technicians must know and is prerequisite to clinical courses, and the humanities, social science and other general education courses, which are essential for all associate degree graduates, provide a foundation for further higher education and help create a well-rounded individual and citizen. The curriculum meets the NYSED minimum in liberal arts and sciences with 20 general education credits and 2 credits in pathophysiology (RAD 241). To meet both NYSED and ASRT curriculum standards for program registration and accreditation, the proposed AAS in Radiologic Technology will need a waiver of the 60-credit limit for associate degree programs.

A. Description of New Courses

101 Radiologic Technology I

Credit **3**

303 Radiologic Technology III

Credit **3**

Overview of hospital administration, including employment issues, labor contracts and litigation processes. Radiation biology and the principles of interaction of radiation with living tissues are discussed. Acute and chronic effects will be discussed. Quality Assurance involves the evaluation of radiographic images along with their delivery systems. State and federal guides are included. Equipment Quality Control and its testing are discussed.

110 Radiographic Procedures I

Credit **2**

This course is designed to provide the knowledge and skills necessary to perform radiographic procedures. This is the first in a series of courses dealing with principal techniques, radiographic anatomy, radiographic procedures and related terminology in the production of images of the chest, abdomen, upper and lower extremeities.The production of images of optimal diagnostic qualities is stressed. In the laboratory portion of the course students use phantom apparatus.

111 Radiographic Procedures II

Credit **2**

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121 Radiologic Exposure II

Credit 1

Factors that govern and influence the production and recording of radiologic images. Film and electronic imaging with related accessories will be emphasized.

240 Cross-Sectional Anatomy

Credit 2

The anatomical structures of the human body in various axial planes. Instructional aids will include radiographs, CT images and MRI images and anatomical models. There will be frequent correlation between radiographs, CT images and MRI images; knowledge that is essential when rotating through CT and MRI.

241 Pathology for Radiography

Credit 2

The biological, physical, chemical and anatomical changes that occur in different disease processes. Also addresses the etiology and pathogenesis of disease states and the physiological changes that accompany altered body states.

250 Imaging Modalities I

Credit 3

Principles related to computed tomography (CT) Imaging for entry level radiography students.

252 Imaging Modalities II

regulations for radiation protection for both the patient and radiographer.

100 Clinical I

Credit **1**

Introduction to the clinical enviroment at an affiliated clinical site. This is the first primary contact between students and patients. Students are assigned to various work areas within the radiology department in order to observe the operations of the entire department. Students are assgned to work under the close supervision of a licensed radiologic technologist while practicing and improving medical imaging skills with emphasis on chest, abdomen and upper extremities.

220 Clinical II

d e r **Credit** **2**

Continued practice and improvement of students' imaging skills at the assigned clinical affiliate under the guidance of a registered licensed radiologic technologist. Introduction to the principles of medical imaging of the lower extremities, pelvic girdle and vertebral column are presented.

221 Clinical III

Credit **3**

This is a continuation of the two previous clinical practicums to improve skills in all routine and contrast media imaging procedures under supervision of a registered and licensed Radiologic Technologist. Students will assume more responsibilities in the diagnostic imaging process. The didiactic information previously presented in Radiographic Procedures I and II are coordinated with assigned rotations at the affiliated licensed Radp(ic P)TJ0.0009.61 -1 0 12 89cc1.Tt in oDC 46 Teicare 34d1MCI9-749(d)2

224 Clinical VI

Credit 2

During this second to last clinical experience at the designated clinical site, students will complete all initial, continuous clinical competency evaluations and objectives prior to beginning the Final Competency Evaluations during the final clinical rotation.

225 Clinical VII

Credit 3

During this final clinical experience the students will exercise independent judgment and discretion in the technical performance of medical imaging procedures. Students must complete competency evaluations in ten required categories. Competencies are to be demonstrated on patients and simulators. This is a full-time six-week clinic with a weekly clinical conference. There is a Registry Review during the last week and a summative final examination for the whole program content.

The entire curriculum outline follows on the next page.

Kingsborough Community College
A.A.S. in Radiologic Technology Curriculum Outline

Course number		Lecture	Lab	Clinic	Credit
101	Radiologic Technology I	3			3
202	Radiologic Technology II	3			3
303	Radiologic Technology III	3			3
110	Radiographic Procedures I		6		2
111	Radiographic Procedures II		6		2
112	Clinical I			96	1
120	Radiologic Exposure I		3		1
221	Radiologic Exposure II		3		1
312	Radiographic Procedures III		6		2
240	Cross-Sectional Anatomy	2			2
250	Imaging Modalities I	3			3
252	Imaging Modalities II	3			3
241	Pathology for Radiography	2			2
260	Filf12 0 0 12 389.95eu8oB5luaomy and CrTJque /MCID 83 BDC BT/TT9 1 Tf12 0 0 12 3				

Radiologic Technology Program Full-Time (4 semester) Plan of Study

Fall / Winter

31	Medical Calculations	1
15	Anatomy and Physiology for Allied Health*	6
11	General Psychology	3
101	Radiologic Technology I	3
110	Radiographic Procedures I	2
120	Radiologic Exposure I	1
112	Clinical I	1
12	English 12 (Six Week)	4

Spring / Summer

25	Applied Physical Science for Allied Health	3
202	Radiologic Technology II	3
221	Radiologic Exposure II	1
111	Radiographic Procedures II	2
113	Clinical II	2
220	Clinical III (Six Week)	4

Fall/ Winter

240	Cross-Sectional Anatomy	3
250	Imaging Modalities I	4
241	Pathology for Radiography	2
312	Radiographic Procedures III	2
303	Radiologic Technology III	3
222	Clinical IV	2
223	Clinical V(Six Week)	3

Spring / Summer

24	English 24	3
252	Imaging Modalities II	3
260	Film Evaluation and Critique	2
266	Quality Assurance	2
224	Clinical VI	2
225	Clinical VII (Six Week)	3

5. Faculty

is proficient in curriculum design, program administration, evaluation, instruction and counseling; has the equivalent of three years full-time experience in the profession; has two years experience as an instructor in a JRCERT accredited program; and holds American Registry of Radiologic Technologists certification or equivalent.

There will be a full-time Clinical Coordinator who holds, at a minimum, a baccalaureate degree; is proficient in curriculum development, supervision, instruction, evaluation and counseling; has the equivalent of two years full-time experience in the professional discipline; has a minimum of one year of experience as an instructor in a JRCERT accredited program; and holds American Registry of Radiologic Technologists certification.

Program faculty will be hired who are qualified to teach the subject, knowledgeable about course development, instruction, evaluation and academic counseling; and hold appropriate professional credentials.

Sufficient numbers of instructors will be hired so that no more than a 10:1 student-to-faculty ratio will be maintained for the program overall and at least a 1:1 student-to-practitioner ratio in clinical assignments.

6. Facilities, Laboratory Equipment, Supplies and Library Materials

Kingsborough Community College already offers a Physical Therapy Assistant program which requires approximately the same laboratory, classroom and faculty office space as a Radiologic Technology program. Some of this equipment can be acquired by donation, rented or borrowed. The largest expenditure will be for the digital radiography equipment and simulators and room modifications to meet radiation safety parameters. These costs can exceed $300,000 if state-of-the-art new equipment is selected. Older equipment that has been replaced in a medical facility can sometimes meet the needs of a program and be significantly less costly and this option will be pursued. Digital equipment is more costly than film systems but the on-going cost of films, dark rooms and film development equipment and chemicals soon overcome what is initially saved. For this expenditure, the College is seeking external funds. However, the lack of external funds will not preclude the Program's developed, as the College is committed to allocating College funds to support it, if necessary.

Professional journals and supporting texts will be added to the Kibbee Library in sufficient numbers to support students' course assignments. The Library will provide access to Medline. Local hospital libraries can also be appropriate resources, and will meet all national standards as long as the arrangement is established and is known to students including any conditions for access students must follow.

7. Cost Assessment

Annual budgets for typical Radiologic Technology programs include on-going disposable supplies, equipment needs, faculty development and accreditation fees. The initial purchase of equipment for a Radiologic Technician Laboratory can reach $200,000. Appropriate

space on or off-campus is being pursued. Faculty salaries are comparable to those incurred at Kingsborough for the current Nursing, PTA and Surgical Technician programs' faculty and directors, which range from $65,000 to $85,000. External funds will be sought for the initial equipment costs and the salaries for new faculty will be incorporated into the College's strategic planning and budgeting process.