UW HEALTH JOB DESCRIPTION

CLINICAL ENGINEER RADIATION ONCOLOGY

Job Code: 410013	**FLSA Status: Exempt**	**Mgt. Approval: S. Rees**	**Date: November 2021**
Department: Supply Chain-Healthcare Technology Management		**HR Approval: S. Whitlock**	**Date: November 2021**

JOB SUMMARY

Under the general direction from the Director of Healthcare Technology Management, and in accordance with the UW Health Medical Equipment Management Plan, the Clinical Engineer Radiation Oncology will independently manage equipment used by the members of the Department of Radiation Oncology in the care of their patients. The equipment includes linear accelerators, simulators, CT scanners, fluoroscopes, and other equipment related to radiation therapy activities. This has a direct impact on patient and employee safety and on facilitating smooth flow of the Radiation Oncology Department. The position will also be responsible for assisting in general electronic and mechanical equipment repairs and maintenance.

The position provides a unique capability within the department because of the required engineering background and knowledge of radiotherapy equipment. The incumbent independently determines job projects and methods based on knowledge and experience with radiotherapy equipment and engineering principles. The job duties can vary due to changing conditions, with problems arising due to advances in technology and clinical care.

The Clinical Engineer Radiation Oncology will assess and provide the equipment needs of the Department of Radiation Oncology. The incumbent will develop and maintain all equipment maintenance schedules and records and ensure operations are in compliance with internal policies/procedures as well as outside licensing and accrediting agency regulations. Troubleshooting will include assisting in the isolation of equipment malfunctions to functional circuit or subassembly using knowledge of system functional operation, electronic and mechanical schematic diagrams, and parameter measurements. The incumbent will read electronic schematics, solder electronic components, construct lifting devises and assemble mechanical, compressed liquid and gas components.

Equipment maintenance must be regularly evaluated for cost–effectiveness. New or replacement equipment purchases must be weighed for their cost versus the need to provide up to date, reliable equipment. Purchases in major areas, such as physiological monitors must be outlined several years in advance. Purchase decisions must be made between several competing vendors. Purchasing involves writing specifications to encourage competitive bidding while still maintaining a minimum standard, evaluating bid responses, determining which system will be reliable, accurate, and able to be updated over its life. All purchases are suggested in compliance with UW Health purchasing requirements and capital budget processes.

The incumbent has contact with equipment manufacturers' technical support, designers, managers and applications specialists. These contacts involve both giving and receiving information as well as providing recommendations on equipment design, maintenance and repair.

The incumbent works with faculty and resident Radiation Oncologists, Physicists, Dosimetrists, and Radiation Therapists to solve equipment needs and teach staff basic trouble-shooting and repairs. Department members rely on the Clinical Engineer Radiation Oncology for expert advice on equipment operation, accuracy, problem resolution, underlying physical principals, as well as quality control measures.

MAJOR RESPONSIBILITIES

Maintenance Planning:

1. Prepare a preventive maintenance schedule and oversee the preventive maintenance program for the Radiation Oncology Department.
2. Develop a cost-effective service plan for each item of equipment (e.g. in-house service, time and materials-based vendor service, service contracts, or insurance plans).
3. Determine practicality and cost-effectiveness of utilizing vendors or UW Health Healthcare Technology Management in-house staff.

Maintenance of Radiation Oncology Equipment:

1. Utilize specialized test equipment to calibrate, repair and evaluate equipment performance.

2. Utilize laptop computer with diagnostic software to diagnose, calibrate and repair computer and/or microprocessor-controlled radiotherapy systems.
3. Troubleshoot equipment with limited or no technical information such as system drawings, schematic diagrams, diagnostic software and error codes.
4. Ensure that the equipment has all mandatory modifications and take appropriate action for equipment recalls or safety problems.
5. Essure that the performance and acceptance testing of Radiotherapy systems and all associated equipment is appropriately documented.
6. Maintain accurate documentation on all repairs, modifications and preventive maintenance performed on radiotherapy systems and associated equipment.

Operator Training:

1. Design and provide in-service education materials for new equipment and coordinate equipment educational programs for Radiation Oncology Department Personnel including graduate students, trainees, physicists and therapists.

Room Design, Equipment Acquisition and Acceptance:

1. Development of bid specifications for new equipment. Work with the Medical Physicists, Clinic Manager, Clinic Supervisors and Physicians.
2. Review bids and purchase orders with Director of Physics and Clinic Manager.
3. Assist with the design of rooms for new equipment in conjunction with a project team.
4. Coordinate Radiation Oncology equipment installation plans and drawings with the manufacturer, Planning Design and Construction, and/or outside contractors.
5. Essure that site preparation is completed for installation.
6. Coordinate installation of radiotherapy systems with manufacturer, Planning Design and Construction, and/or outside contractor.

Asset Management:

1. Assist in the development and implementation of a capital equipment budgeting plan for the Department of Radiation Oncology.
2. Assist in the preparation of equipment maintenance budgets for all Radiation Oncology capital equipment. Provide ongoing oversite of equipment budgets.
3. Assist in the review and analysis of monthly operating reports and general ledger statement for areas of responsibility noting variances in expenses. Recommend actions to resolve unacceptable variances.
4. Plan, procure, and maintain a parts inventory.
5. Assist in the management of all service contracts.
6. Manage the quality control program.

ALL DUTIES AND REQUIREMENTS MUST BE PERFORMED CONSISTENT WITH THE UW HEALTH PERFORMANCE STANDARDS.

JOB REQUIREMENTS

Education	Minimum	Associate Degree in Electronics or applicable military education. Two (2) years of relevant linear accelerator equipment experience may be considered in lieu of degree or military education in addition to experience below. (Applicable military education: DD214 Form will be required to verify relevancy)
	Preferred	Bachelor's degree in electrical engineering, biomedical engineering or physics.
Work Experience	Minimum	• Three years of experience troubleshooting and repairing electronics equipment. • Two years of experience in maintenance and repair of radiation therapy equipment.
	Preferred	Five years related experience working repair of radiation therapy equipment.
Licenses & Certifications	Minimum	
	Preferred	Certification as a Biomedical Electronic Technician (CBET). Manufacturer's certificate in linear accelerators.
Required Skills, Knowledge, and Abilities		• Experience in the repair of mechanical, electromechanical, electronic, and/or computer medical technology to diagnose and repair devices and systems. • Ability to learn equipment maintenance and repair procedures from courses, service engineer representatives, and training materials.

	• Ability to perform during emergency or stressful situations. • Must have excellent written and oral communication skills. • Knowledge and skills in microwave, pulsed RF, and vacuum systems as required for maintenance of linear accelerators. • Proven competency in performing preventive maintenance and advanced troubleshooting and repair of the clinical equipment. • Component-level troubleshooting and repair of high-energy linear accelerators, multi-leaf collimators, and one or more of the following: radiotherapy simulators, diagnostic X-ray equipment, CT scanners, and digital imaging equipment desired.

AGE SPECIFIC COMPETENCY (Clinical jobs only)

Identify age-specific competencies for direct and indirect patient care providers who regularly assess, manage and treat patients.

Instructions: Indicate the age groups of patients served either by direct or indirect patient care by checking the appropriate boxes below. Next,

	Infants (Birth – 11 months)		Adolescent (13 – 19 years)
	Toddlers (1 – 3 years)		Young Adult (20 – 40 years)
	Preschool (4 – 5 years)		Middle Adult (41 – 65 years)
	School Age (6 – 12 years)		Older Adult (Over 65 years)

JOB FUNCTIONS

Review the employee's job description and identify each essential function that is performed differently based on the age group of the patient.

PHYSICAL REQUIREMENTS

Indicate the appropriate physical requirements of this job in the course of a shift. *Note: reasonable accommodations may be made available for individuals with disabilities to perform the essential functions of this position.*

	Physical Demand Level	**Occasional** Up to 33% of the time	**Frequent** 34%-66% of the time	**Constant** 67%-100% of the time
	Sedentary: Ability to lift up to 10 pounds maximum and occasionally lifting and/or carrying such articles as dockets, ledgers and small tools. Although a sedentary job is defined as one, which involves sitting, a certain amount of walking and standing is often necessary in carrying out job duties. Jobs are sedentary if walking and standing are required only occasionally and other sedentary criteria are met.	**Up to 10#**	**Negligible**	**Negligible**
	Light: Ability to lift up to 20 pounds maximum with frequent lifting and/or carrying of objects weighing up to 10 pounds. Even though the weight lifted may only be a negligible amount, a job is in this category when it requires walking or standing to a significant degree.	**Up to 20#**	**Up to 10#** or requires significant walking or standing, or requires pushing/pulling of arm/leg controls	**Negligible** or constant push/pull of items of negligible weight
X	**Medium:** Ability to lift up to 50 pounds maximum with frequent lifting/and or carrying objects weighing up to 25 pounds.	**20-50#**	**10-25#**	**Negligible-10#**
	Heavy: Ability to lift up to 100 pounds maximum with frequent lifting and/or carrying objects weighing up to 50 pounds.	**50-100#**	**25-50#**	**10-20#**
	Very Heavy: Ability to lift over 100 pounds with frequent lifting and/or carrying objects weighing over 50 pounds.	**Over 100#**	**Over 50#**	**Over 20#**
List any other physical requirements or bona fide occupational qualifications:				

Note: The purpose of this document is to describe the general nature and level of work performed by personnel so classified; it is not intended to serve as an inclusive list of all responsibilities associated with this position.