Position Title: **Systems Software Engineer**  
Organizational Unit: Center for Imaging Science  
FLSA Status: Exempt

**BASIC FUNCTION:**

In support of CIS missions, a Systems Software Engineer provides software design, development, and system support. S/he designs, develops and maintains software programs applied to technical, scientific or engineering problems for a subsystem or system. This includes design preparation and presentation, code development, documentation preparation, web development, unit testing, and software debugging. The design activity is based on the scope of the task, which may require the system software engineer to do all design work, participate on a design team or lead a design team. Will work with operations and users to analyze and resolve problems. May develop and specify requirements for modifications or enhancements for a subsystem or system. Provide technical direction and mentoring to more junior software engineers, including students.

**MINIMUM QUALIFICATIONS:**

- Substitution of relevant education or experience for stated qualifications may be considered.

**Knowledge, Skills, and Abilities:**

- Fluent knowledge of software development techniques and practices.
- Fluent knowledge of a high level language (e.g. FORTRAN, C, C++, or Java).
- Fluent level of proficiency in a computer operating system such as NT, Unix, or VMS.
- Fluent knowledge of software support products such as text editors, debuggers, or email.
- Good verbal and written communication skills.
- Working mentoring and/or teaching ability.
- Demonstrated ability to establish and maintain effective professional working relationships.
- Demonstrated technical leadership in software development activities.
- Working knowledge in at least 3 of the following areas and Fluent knowledge in another 3 areas:
  - Any physical science (e.g., physics, imaging science, chemistry, color science, etc.), mathematics, or engineering discipline
  - Compiler design
  - Operating and network system design
  - Distributed processing/computing
  - Client/server protocols
  - OO development methodologies
  - Scripting languages
  - Configuration Management
  - Algorithm design
  - Relational/OO database technology
  - Data structure selection
  - Software Testing Methodologies
  - Artificial Intelligence
  - Graphical User Interfaces
  - Web application development

**Education**

- One of the following:
  - Bachelor's Degree in Computer Science, Physics, Math, or technically related field (masters degree preferred).
Completion of an advanced software development license program.

Experience
- Three-six years prior experience developing medium or large projects in a formal software development organization, sufficient to demonstrate the defined knowledge, skills and abilities.

Duties and Responsibilities*
* See annual performance goals and objectives for complete list

A Systems Software Engineer will make modifications and enhancements to very large and technically complex software systems. To support this effort, a senior software engineer will:

- Determine the effort and time that will be required to resolve assigned tasks.
- Design or participate in the design of software modifications or enhancements. This includes usage of good design practices, documentation, and presentation of design reviews.
- Complete assigned development tasks in an accurate, robust, well documented (code, user info, test info), well tested (on multiple platforms) manner according to a defined schedule.
- Organize code reviews for assigned tasks; reviews will include software changes, test plans, user release notes, and any other pertinent information.
- Support code reviews of peers; document these efforts with brief details of findings
- Keep the project lead appraised of any problems or schedule slips as soon as they are apparent.
- Develop new regression tests for new software that is developed.
- Follow all defined guidelines for software development/maintenance and deliveries.
- Investigate, analyze and share knowledge of new and/or pertinent software methodologies and tools.
- Attend subsystem meetings and contributes productively to action items and their resolution.
- Provide input to Project lead on issues such as software development/maintenance environments, software engineering methods and standards and new hardware, etc
- Responsible for keeping technically abreast in software development and maintenance areas
- Provide technical direction to less senior staff members, including students.
- Identify requirements, perform feasibility studies and vendor surveys for team hardware needs.

Definitions:
A basic level of expertise can be accomplished through the successful completion of a course in a specific area or a curriculum in a general field. This level would be assigned to someone who understands the basic topics, principles or practices within an area but has not practiced these principles in a non-class environment.

A working level of expertise can be accomplished through the successful completion of a curriculum in an area. This level would be assigned to someone who understands complex topics, principles or practices within an area but has not practiced these principles in a non-class environment.

A fluent level of expertise would be assigned to someone who understands the complex topics, principles or practices of an area and has demonstrated their competency through the completion of a small number (e.g. 3-4) of medium-sized to large-sized projects in a formal software development environment.