Position Title: Consulting Systems Software Engineer/Computer Scientist
Organizational Unit: Center for Imaging Science, College of Science
FLSA Status: Exempt

**BASIC FUNCTION:**

- In support of the CIS, COS and RIT mission, a Consulting Systems Software Engineer or Computer Scientist is responsible for providing a high level of computer science and software development technical expertise for all activities associated with new program initiatives and development. Identification of possible concepts, contribution to system trade studies, engineering studies of selected concepts, creation of proposals, evaluation of proposed designs, generation and negotiations of contract technical details, and/or modification of systems under construction. 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:**

- Expert technical knowledge of major software subsystems and sub-systems and fluent knowledge of the scientific application of those systems
- Expert knowledge of software development techniques and practices.
- Expert knowledge of at least two high level languages (e.g. FORTRAN, C, C++, or Java).
- Fluent level of proficiency in a computer operating system such as NT, Unix, or VMS.
- Expert knowledge of software support products such as text editors, debuggers, or email.
- Expert verbal and written communication skills.
- Expert mentoring and/or teaching ability.
- Proven Ability to establish and maintain effective professional working relationships.
- Proven technical leadership in software development activities.
- Fluent knowledge in at least 3 of the following areas and Expert knowledge in another 5 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**
Advanced University Degree (PhD preferred) in Computer Science, Physics, Math, Engineering, technical management or other technically related field *(suitable experience and accomplishments can be substituted, as appropriate)*

**Experience**
- Minimum of 15 years experience in large software and computer systems development and design projects.

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

A **Consulting Computer Scientist/Software Engineer** will design, develop, and make modifications and enhancements to very large and technically complex software systems. To support this effort, a Consulting Computer Scientist/Software Engineer will:
  - Provide system level software and computer expertise for new activities.
  - Address all systems level software and computer system and interface issues.
  - Interface with industry, government, manufacturers or vendors in the development and definition of software and computer system concepts.
  - Develop detailed conceptual design of software and computer systems and perform tradeoff studies of platforms and capabilities.
  - Performs system level analysis from requirements definition through deployment.
  - Lead teams in the development of software and computer system architectures, perform system level architecture trade studies, develop operational concepts and flow requirements.
  - Support proposal generation and other new business efforts.
  - Document work in requirements documents, design specifications, white papers, and proposals.
  - Organize and lead center, college, or institute wide senior teams to perform in house reviews of proposals, concepts and detailed designs.
  - Guide and mentor more junior software engineers and computer scientists to promote skill growth.

Division Approval:
HR Approval:
Effective Date:
Revised Date(s):
  - Develop integrated schedules for software development projects.
  - Lead the 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 action items in an accurate, robust, well documented (code, user info, test info), welltested (on multiple platforms) manner according to a defined schedule.
  - Organize code reviews; 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 through appropriate mechanisms.
  - Keep the lead apprised 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 engineer or technical designee on issues such as software development/maintenance environments, software engineering methods and standards and new hardware, etc.
  - Keep technically abreast in software development and maintenance areas.
• Provide technical direction and mentoring 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.

An *expert* level would be assigned to someone who has a thorough understanding of topics, principles or practices in an area and has demonstrated their competency through the completion of a number (e.g. 8-10) of medium-sized to large-sized projects in a formal software development environment.

A *demonstrated* skill indicates that a person has successfully completed this skill but there is some risk that the same result will not occur for the next opportunity.

A *proven* skill indicates that a person has successfully completed this skill often or with sufficient quality that it is expected that the same successful result will occur for the next opportunity.