

RADIOLOGY RESIDENT 4TH YEAR INFORMATICS PATHWAY

This will be a 6-12 week elective with time divided into short blocks (1-2 weeks) during the 12 months of the 4th year. The description provided below is for a full 12 week elective but shorter electives can be done at the discretion of the elective supervisor. The overall goal is to graduate a resident with superior skills in using and developing radiology information technology resources and with an understanding of informatics research design along with the human-computer interface.

ELECTIVE SUPERVISOR

Alan Siegel MD

ELECTIVE STRUCTURE

The elective encompasses 5 areas of study/application. This document is provided to define learning objectives and assignments within these areas of study. A single project could fulfil multiple assignments in each area of study. Participants in the pathway develop individualized projects with the elective supervisor to meet the learning objective and assignments provided.

1. TECHNICAL ASPECTS OF INFORMATICS

Learning objectives

Upon completion of this elective, the resident will be able to:

- Perform technology assessment (including storage area networks, server architectures, network mesh design, service-oriented architecture, database design and SQL, high availability design, and HIPAA and security)
- Describe interoperability topics (including HL7/DICOM, IHE, Web services, and extract/transform/load)
- Understand systems management (including IT infrastructure library and computerized maintenance management systems)

Assignments

- Take the “2013 IIP Bootcamp Webinar” <http://siim.org/career/2013-iip-bootcamp-webinar> -9hrs of lecture (would be best to complete this over the first 2 weeks of the elective along with reading assignments and setting up research projects). (100\$)
- Read the Imaging Informatics Professional 2013 Bootcamp Training Manual
- Read articles of interest at <http://siim.org/content/educational-content>
- Read literature on PACS, DICOM, RIS, HL7
 - Practical Imaging Informatics, *Branstetter*
- Give a lecture to the department on IT infrastructure

Evaluation

- Lecture evaluation
- Feedback from elective supervisor

2. HUMAN COMPUTER INTERFACE DESIGN

Learning objectives

Upon completion of this elective, the resident will be able to:

- Describe Requirements gathering/analysis (who needs what)
- Describe Usability analysis (ease of human use)
- Describe Workflow modeling
- Be able to utilize Information visualization and create diagrams to this effect

Assignments

1. Become part of the Radiology Informatics team: Join the medical Informatics meeting once a month and the departmental Radiology IT meetings twice a week (Dr. Siegel will put resident on email list).
2. Spend up to 2 weeks of the elective working directly with Radiology and Hospital IT (Shadowing each member of the team)
3. Meet with elective supervisor regarding readings and progress
4. Learn the concept of usability analysis and requirement gathering
5. Develop or improve one component of the department radiology website

Evaluation

- Qualitative evaluation by the elective supervisor and IT personnel

3. RESEARCH

Learning objectives

Upon completion of this elective, the resident will be able to:

1. Describe the ways in which performing informatics research differs from clinical research
2. Develop an informatics project to apply this knowledge.
3. Fill out an application for CPHS approval of an informatics project (If needed) Understand funding in informatics
4. Present informatics research/projects

Assignments

- Read assigned papers on informatics research
- Plan an informatics project that can be executed during the year with a mentor
- If required, work with faculty to submit an application or CPHS Exemption to the CPHS for the study. Note: if this is needed, the project will need to be planned and the application made during the resident's 3rd year.
- Execute this project
- Present the project results to the department
- Write and submit an abstract to a national meeting
- Attend SIIM
- Write up the project for publication (long term goal)

Evaluation

- Evaluation by research mentor
- Evaluation by faculty at project presentation

4. APPLICATION OF TECHNIQUES

Learning objectives

Upon completion of this elective, the resident will be able to:

- Be a departmental expert on radiology informatics systems
- Provide guidance to clinicians in interfacing with technology

Assignments

- Develop or improve one component of the department radiology website
- Improve on the workflow for recording conferences

- Improve the workflow for teleconferencing for off-site rotations (such as the VA with Webex)
- Engagement in the RISE committee.

Evaluation

- Elective supervisor evaluation

RESOURCES

1. Practical Imaging Informatics Branstetter, ed.
2. Department provides funds for the resident to join SIIM (\$100). Membership includes Journal of Digital Imaging.
3. Attend the annual SIIM Meeting. (1500\$)
4. SIIM 2013 IIP Bootcamp Webinar (100\$)
5. Department provides funds to send the resident to the Annual SIIM meeting.
6. SIIM Website: <http://siim.org/index.php>
7. Acad Radiol. 2013 Oct;20(10):1195-212. doi: 10.1016/j.acra.2013.07.006. Imaging informatics: essential tools for the delivery of imaging services. Mendelson DS1, Rubin DL.
8. Radiographics. 2011 Oct;31(6):1511-27. doi: 10.1148/rg.316105207. Informatics in radiology: Measuring and improving quality in radiology: meeting the challenge with informatics. Rubin DL.
9. Acad Radiol. 2009 May;16(5):524-34. doi: 10.1016/j.acra.2009.01.009. Informatics methods to enable patient-centered radiology. Rubin DL.

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