**Emergency Ultrasound Medical Student Elective**

**Syllabus**

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Course duration: 4 weeks

Welcome to the Emergency Ultrasound Elective! It will be a busy month, but I guarantee that by the end of it, you will be awesome at bedside ultrasound. The course materials are on D2L (<https://d2l.arizona.edu/index.asp>) with the course title “Emergency Ultrasound.” Become familiar with what is available here. There is a plethora of resources.

**Requirements:**

**Introduction PowerPoint**

We have an orientation video on D2L. It gives a basic introduction to emergency ultrasound in our department and how to use the machines. You will need to review EM Ultrasound policies, Indications, Knobology, QpathE, Required Images, US probe care, and equipment. This will take about 1 hour. Please go through these prior to completion of the pre-test. There are questions from these PowerPoints on the pre-test.

**Pre-test**: This is available on D2L. You need to complete it on or prior to Day 1 of the rotation. Do your best. We don’t expect you to get them all correct, but we ask that you take it until you get over 80%. You will likely learn something helpful while completing it!

**Course book:** Introduction to Bedside Ultrasound, Volume 1, by Mike Mallin and Matt Dawson. This text for the rotation is an iBook. Your options for getting the book are:

1. iPad iBook– Introduction to Emergency Ultrasound Vol 1 and Vol 2 is now free in the iBook store. Please try to download them prior to your first QA as they will take over an hour to download. You can bring an iPad to QA and we can help you download it if you forget.
2. Inkling: We have an account with Inkling and have bought both Introduction to Emergency Ultrasound Vol 1 and Vol 2. You can use these books while you are on the rotation using our username ([emus@aemrc.arizona.edu](https://mail.medadmin.arizona.edu/owa/redir.aspx?C=68c6b252b39f45fa83277997bcbe1600&URL=mailto%3aemus%40aemrc.arizona.edu)) and password (ultrasound). [Inkling.com](https://mail.medadmin.arizona.edu/owa/redir.aspx?C=68c6b252b39f45fa83277997bcbe1600&URL=http%3a%2f%2fInkling.com) is an ebook store/app similar to the Apple ibook store. They sell interactive books. There are multiple ways to access books purchased through Inkling (iPhone/iPad, android phone, Google play, Mac, and PC). If you are planning on reading the Introduction to Bedside Ultrasound on a mobile device (iPhone/iPad or android phone) you must first download the **inkling app** (free app). If you are planning on reading on your computer (Mac or PC), enter [inkling.com](https://mail.medadmin.arizona.edu/owa/redir.aspx?C=68c6b252b39f45fa83277997bcbe1600&URL=http%3a%2f%2finkling.com) in your browser. Click “read” in the upper right-hand corner. This will bring you to a login page. Enter the login info. Log in to the app or webpage. You are now ready to learn ultrasound from! Click on either Introduction to Bedside Ultrasound Volume 1 or 2 to begin reading.
3. There is a pdf version on D2L. We don’t recommend that you use this version primarily as it does not have the video or interactive features (which are a large part of the book and very important for your learning).

Required chapters:

1. Fast/EFast
2. Basic Cardiac\*
3. Aorta
4. Lung\*
5. Rush\*
6. Renal\*
7. Pregnancy\*
8. Physics\*
9. Central lines\*
10. Fluid responsiveness\*
11. Joint injection\*

\*Quizzes on the starred chapters are on D2L and must be completed prior to the last day of the rotation.

**Rotation orientation:**  You will come to **QA session** from **9am to noon** on the first day of your rotation (Monday) and every Monday while you are on the rotation. This will be in the ultrasound faculty conference room. This is in **room 4163, on the 4th of the medical school library**. Prepare for a full day on the first day. The fellows or faculty will go over machine use, QpathE and answer any questions about the rotation. After orientation, we would like for you to review a series of narrated lectures on the website: <http://www.emergencyultrasoundteaching.com/index.html>.

Please review these lectures:

Physics AEUS (click on the blue button)

E-FAST AEUS

Aorta AEUS

Renal AEUS

Thoracic AEUS

Echo Part 1 AEUS

Echo Part 2 AEUS

Vascular Access - Vascular Ultrasound

Skin and Soft Tissue

They are an excellent resource and will help you start out on the right foot with the rotation. Please expect to be busy the entire first day of the rotation.

**Quality Assurance (QA)** **sessions:** Every Monday from 9am to noon we have QA sessions. All the ultrasound faculty, fellows, residents on their ultrasound rotation, and students meet and go over the notable scans for the week. This is in our ultrasound office in room 4163**.** Please mark any of your ultrasound exams that should be reviewed prior to the session on Monday. To mark them, go to QpathE, highlight your exam, click “Tags,” and choose “To be reviewed during QA.” Be prepared to share your most exciting, most difficult or most interesting exams you had over the week. We review images and articles that are usually sent out over the weekend prior to Monday. QA sessions are required. The policy on missed shifts (see below) applies to QA sessions.

**Scanning shifts**: Fourteen scanning shifts will be assigned to you. You will do these shifts while faculty members and ultrasound fellows who are working clinically. Dr. Elaine Situ-LaCasse sets the schedule in advance for all rotators. Please contact her if you have schedule requests in advance (esitu@aemrc.arizona.edu). She will send you the schedule approximately 1-2 weeks before your start date. Please check that your shift schedules allow 9 hours between any shifts and no more than 6 in one week. If you have scheduling conflicts, it is your responsibility to address these in advance and reschedule yourself for another available scanning shift with the approval of Dr. Situ-LaCasse. You will be required to make up any missed shifts and your grade will be incomplete until scanning shifts are completed, and the minimum number of required examinations are complete.

When working with the faculty member, your goals are the following:

1. See good pathology
2. Work on getting all of the required images for every exam type
3. Reach your desired number of scans

**Presentation**: On your last QA day, you will present an interesting topic or mini-literature review on a particular ultrasound topic to the rest of group. This is a low-stress presentation. PowerPoint is optional. If you need help coming up with a topic, we can assign one to you.

**Bedside ultrasound exams:**

You will be required to perform 120 ultrasound exams during your scanning shifts. This will be tracked using the number of scans you have performed in QpathE. Every exam you do will be QA’d by ultrasound fellows and faculty, and you will get feedback on them. You will not get credit for exams where the worksheet was not filled out, not all required images were recorded, or if the images were inadequate.

While on the rotation, you will do two types of exams: patient care exams and educational exams. When you show up to your shift, please check in with the faculty member you are working with, see if there are any studies they would like you to get started with, and get an ASCOM phone so that they can call you while you are there. The faculty member that you are working with will let you know if there are **patient care exams** that they are going to do. Do these studies first. These are studies that will be used by the attending on their patient for medical decision-making. For these studies, please go to the room and do your best to get all required images. Then call the faculty member that asked you to do the patient care exam so that they can come to the bedside and review your acquired images. The faculty member will acquire their own images and will give you pointers on your exam at that time. This is an excellent opportunity to learn one on one with the faculty.

You can also do **educational exams.**  If there are no patient care exams to be done, work on educational exams. You will repeat other radiology department studies that have been done. For instance, if a patient has had a RUQ ultrasound performed by radiology during their ED visit, you may do a bedside exam in order to compare your findings with theirs. Also, if a patient had a CT of the abdomen, you can do an aorta, renal, and FAST exam on that patient. The attending you are working with will point you to good educational exams. These patients will likely have important pathology for you to see or good exams for you to practice, but they will be getting a confirmatory study or consult. *These exams are for your education only*. You are required to obtain the patient’s consent prior to doing these studies. Please explain that the study is for your education only and that they will be getting (or have already gotten) a confirmatory study. If a patient is not comfortable or does not want you to do the exam, please stop, and excuse yourself from the room. You are not required to call the faculty member to the bedside for these exams, but we recommend it so that you can get feedback on your exams. *Do not perform educational exams on patients who will not have a confirmatory study.*

**Other educational activities:** There may be other educational opportunities offered through the ultrasound section each block. You may hear about these on Monday at the QA session or via email. These could include conference lectures, faculty workshops, hands-on sessions that we are offering for other groups, journal club, ICU ultrasound rounds or MSK ultrasound rounds at the sports medicine clinic. Five hours of other educational activities are required over the four weeks of the rotation.

**Research:**  You may have an opportunity to participate in research projects that are going on within our division in various capacities. This is elective, but it may be substituted for your educational activity time.

**Final exam:** This exam will not be proctored and can be taken anytime during the last week of the rotation. A passing score is greater than 70%. Please do not use outside sources when taking this exam. We will implement the Honor System here, but you should not have any issues if you have reviewed the materials above and/or below.

**Other educational resources:** Various resources for you to use for self-education while on the rotation:

http://www.ultrasoundpodcast.com

http://emergencyultrasoundteaching.com

<http://www.sonoguide.com>

[http://www.saem.org/narrated-lectures](https://mail.medadmin.arizona.edu/owa/redir.aspx?C=db679eada09e48ec9f48df9cd4a8bcd4&URL=http%3a%2f%2fwww.saem.org%2fnarrated-lectures)

**Absences:** If you cannot make it to a shift that you had stated you would be coming to or to a Monday morning QA session, it is your duty to alert Dr. Situ-LaCasse via email that you will not make it prior to the start time. It is also your responsibility to find another shift to replace the missed shift. Failure to properly notify faculty of an absence is grounds for failure of the rotation.

**Grades:**  All required elements (see checklist below) must be completed by the end date of your rotation in order to pass the rotation. Failure to complete any one of the elements will result in failure of the rotation. Under special circumstances, you may be given additional time to make up missed shifts, QA sessions, etc. after discussion with Dr. Situ-LaCasse.

**Machine care:** It is your responsibility to take good care of the machine. Watch the cords and love it like you would your first-born child. It is also your responsibility to clean machines before and after each use. Gray-top wipe containers are attached to each machine. Use only these wipes. They must be wiped once with a wipe to remove the gel, then wiped with a second wipe and left to dry for 3 minutes.

**Sharing the machine:** There are limited machines in the department. If you are using a machine and a resident or attending needs it for any reason, you must give it up. You should probably go and watch whatever they are doing because you will likely learn something. If there are other residents or fellows scanning that day, you should work with them and share the machine.

**Course evaluation:** At the end of the rotation please complete the course evaluation in the quizzes section on D2L. This gives us valuable feedback about how you learned, what elements of the rotation you found helpful, and how to make it better for next year.