



The University of Kentucky

Center for Advanced Training and Simulation

Curriculum Guidelines

Director: J. Scott Roth, MD, FACS

Assistant Director: Joseph Iocono, MD, FACS

Clinical Nurse Coordinator: Margaret Plymale, RN

Laboratory Manager: Jim Hoskins

We gratefully acknowledge Stryker, Ethicon, and Covidien for their continued support and participation in the UKMC MIS Curriculum.

MIS Service Contact List

Dr. J. Scott Roth	323-6346 x 232	Pager 330-6595	C-222
Margaret Plymale, RN	323-6346 x 283	Pager 330-7418	C-225
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Jim Hoskins	323-5450	Pager 330-6001	109 C
Dr. Joseph Iocono	323-5625	Pager 330-1588	MN-102
Gina Greene	323-6346 x 232		C-225

Overview of the MIS Curriculum

The University of Kentucky Center for Advanced Training and Simulation (CATS) has provided laparoscopic training resources covering didactic materials and dexterity skills for the residents of the department of surgery since 1999. The CATS has placed a high priority issue to provide adequate space, state-of-the-art equipment, dedicated staff and faculty support, and a detailed comprehensive curriculum for the residents. The center has been responsible for both the expenses and the time commitments required because it is our belief that it is imperative for the residents to take part in such training outside the operating room first. In fact, national curricula that require “outside practice and competence” will be the norm for all surgical residencies by 2011. The skills of instrument manipulation, determining 3D spatial relationships in an environment with only 2D feedback, respect for tissue, procedure planning and execution, and the concept of economy of motion are just a few of the items that you should be comfortable with before you are asked to perform laparoscopic surgery.

The program is divided into three major areas, junior curriculum (PGY1 and PGY2) and FLS curriculum (PGY3), and senior curriculum (PGY4, and PGY5). The junior curriculum will include hands-on practice and qualification in the basic open surgical and MIS skills exercises. These sessions will be available on a walk-in basis in the training laboratory. We will provide some materials in order for you to practice many of these skills at home. Lab hours are 8:30 to 5:30 (M-F) and special sessions after hours and on weekends can be arranged by contacting Jim Hoskins. The final portion of the junior curriculum will be study and practice skills sets necessary for the more common MIS procedures.

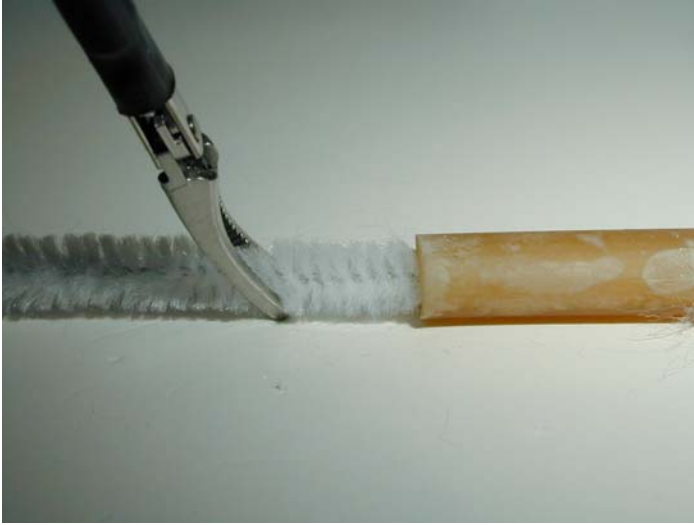
Full certification in the ACS Fundamentals of Laparoscopic Surgery (FLS) will be an integral part of the middle year of the curriculum (PGY3). The FLS curriculum will include hands on practice and qualifying on the Fundamentals of Laparoscopic Surgery skills sets available in the CATS.

The Senior curriculum will be focused mainly on more advanced laparoscopy procedures and skills. There should be adequate time during office hours to practice the skills necessary during your year. However, it will take planning and organization on your part to do so. There are times within the Pediatric surgery or Green surgery services that are designed to be “tailor made” to go to the lab and practice. However, practice can be done at any time of the year. If you experience any difficulty in accessing the MIS training lab, please notify Jim Hoskins, Dr. Roth, Dr. Iocono, or Dr. Endean.

We plan for this to be a constantly evolving curriculum, so if you have comments or suggestions you believe would improve the quality of our program, please contact Jim Hoskins the lab manager (jdhosk00@uky.edu).

MIS Skill Sets Descriptions

PGY1 Curriculum



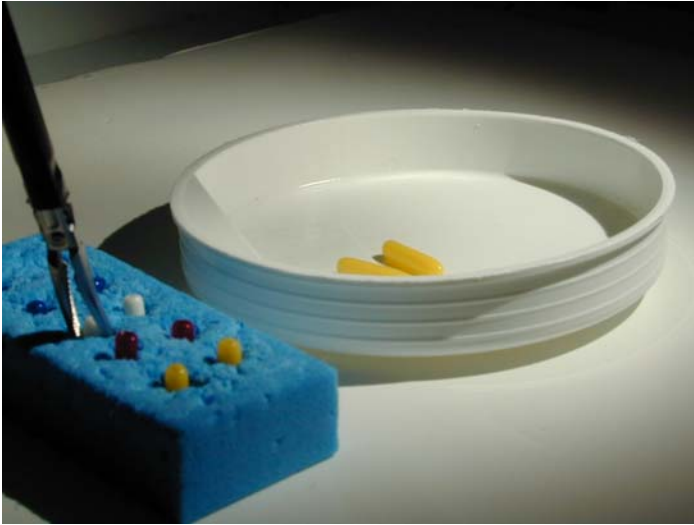
SKILL #1: Cannulate a Small Duct

Activity: Segment A: Place pipe cleaner through a plastic tube from right to left with the dominant hand. One dissector is used to manipulate the pipe cleaner while a second dissector is used to stabilize the tube.

Segment B: The pipe cleaner is passed from left to right with the non-dominant hand.

Time for Completion: For each segment, 40 seconds

Objective: to develop laparoscopic skills with the dissector. It resembles cannulation of the biliary system.



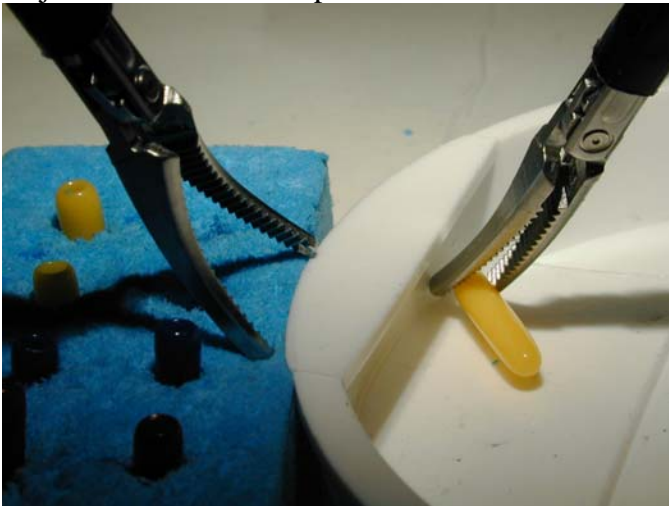
SKILL #2: Pegboard with Single Hand Transfer

Activity: Segment A: With dominant hand, remove and replace 10 pegs.

Segment B: With non-dominant hand, remove and replace 10 pegs.

Time for Completion: For each segment, 4 minutes

Objective: to refine the precision of the use of the dissectors.



SKILL #3: Pegboard With Peg Pass (*)

Activity: Segment A: Remove all 10 pegs with dominant hand. Pick up a peg with non-dominant hand, transfer to dominant hand, place in the pegboard with your dominant hand. Place 10 pegs in Board.

Segment B: Remove all pegs with non-dominant hand. Pick up a Peg with dominant hand, transfer to non-dominant hand, place in pegboard with your non-dominant hand. Place 10 pegs in Board.

Time for Completion: For each segment, 4 minutes

Objective: to master the technique of using both hands during surgery to accomplish a single task.

(*) Categorical residents will have the option of substituting the FLS Peg Pass



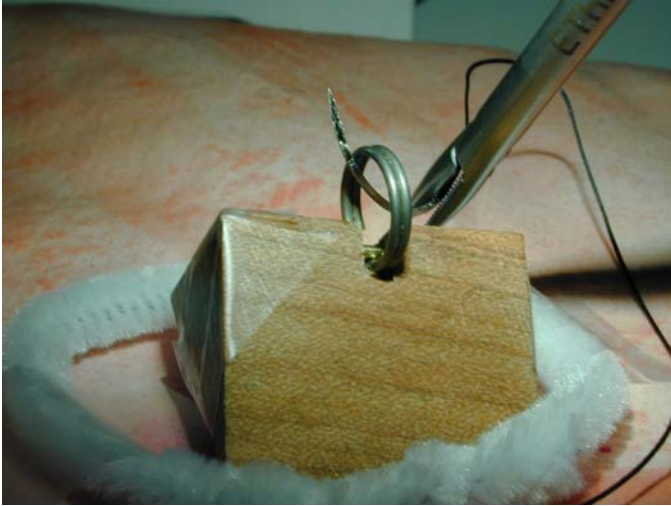
SKILL #4: Rope Pass

Activity: Segment A: manipulate the length of rope by passing it from one hand to another touching only the white areas of the rope.

Segment B: Pass the length of rope in the same manner as segment A, but in the opposite direction.

Time for Completion: For each segment, 2 minutes

Objective: to master the technique of manipulating a run of the bowel with two instruments.

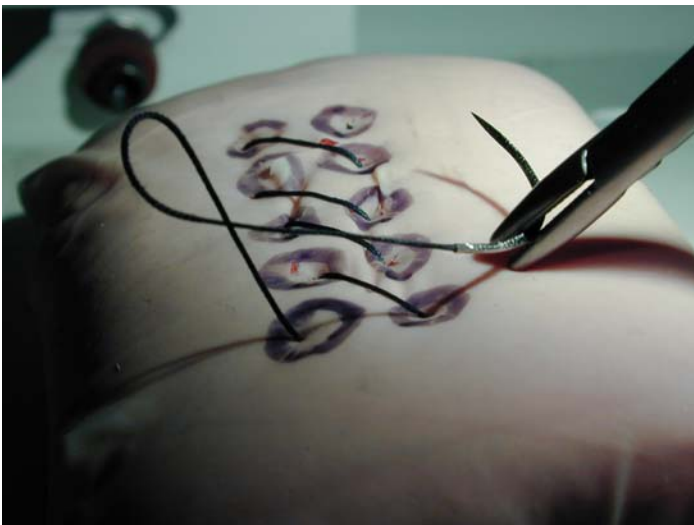


SKILL #5: Following the Curve of the Needle

Activity: While passing the needle from one instrument to another, place the needle and suture five times through the eyelet in the same direction without moving the block above the containing circle.

Time for Completion: 4 minutes

Objective: to refine skill in the placement of the needle through tissue.



SKILL #6: Appropriate Bites in Suturing

Activity: Place the needle and suture through one circle and out its opposite circle. Continue through the next target circle and out its opposite circle, and so on, until all pairs of circles have been traversed.

Time for Completion: 4 minutes

Objective: to emphasize suturing in terms of appropriate bites and tissue handling.

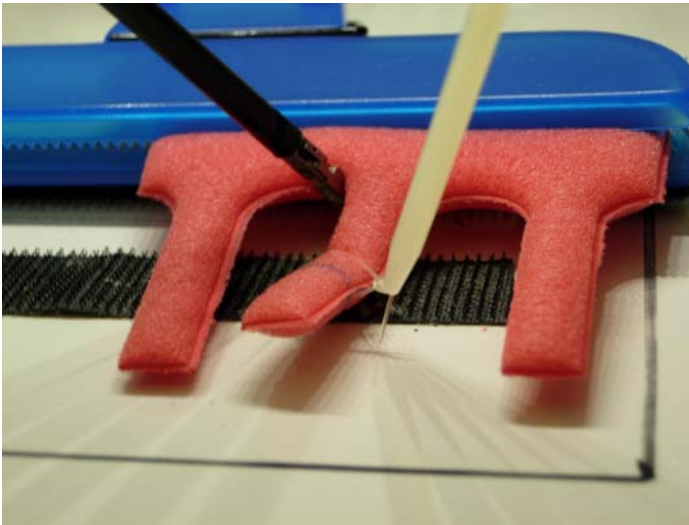


SKILL #7: 30 Degree Scope Drill

Activity: Manipulate the 30 degree laparoscope so that at least 5 cross hair targets are aligned properly with an overlay on the monitor screen.

Time for Completion: 70 seconds

Objective: to refine skill in the use of the 30 degree laparoscope.



SKILL #8: FLS Endoloop Drill (*)

Activity: The object in this task is to place the ligating loop precisely on the black line, secure and cut the loop material. You cannot break or preload the endoloop prior to beginning the task. Time begins when any instrumentation is seen on the screen (or when breaking or preloading the endoloop). Time ends when you cut the loop material.

Time for Completion: 53 seconds

Objective: to learn the proper use of the Endoloop.

Open Surgical Skill Sets Descriptions

There are also open components to our Intern curriculum this year.

- 1 Two inches of two-handed surgical knots are to be completed each week. All knots will be turned in to Pam Creech on the last working day of the month. Participation will be recorded and knots will be evaluated by Dr. Iocono.

When Dr. Iocono has determined that the intern has achieved complete mastery of knot tying, he will notify them by e-mail that they can set up a time to demonstrate their skill in the MIS lab with Mr. Hoskins to be “signed off”. Once this is done, the intern will no longer be required to turn in these knots.

Knot tying practice

8 inches of silk knots handed in each month for first 6 months

8 inches of monofilament knots each month for second six months

(It is recommended that you wear gloves at home while practicing)

Knot tying exam

Ability to throw 10 appropriate knots in 15 seconds on 3 different occasions with braided and monofilament suture while wearing gloves

For final exam you should be able to do it either 2 handed or 1 handed

- 2 Wound closure on wound targets will be performed once every three or four months as per the following schedule.

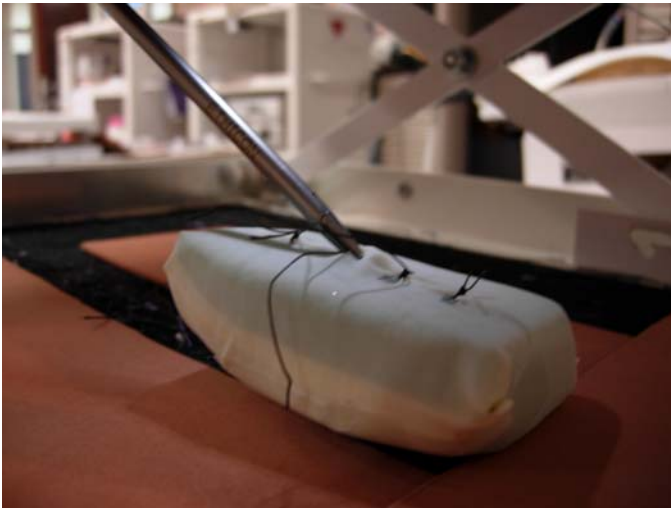
A 2 layer closure with vicryl suture in the deep layer interrupted and interrupted silk suture in the superficial layer	Practice July-August 2011
Target sutured and evaluated	September 2011

A 2 layer closure with vicryl suture in the deep layer running and silk running suture in the superficial layer	Practice October-November December 2011
Target sutured and evaluated	January 2012

A Carter-Thomason Closure	Practice February-March-April 2012
Incision closed and evaluated	May 2012

These sutures will be evaluated by Dr. Roth.

Skills Required for the PGY2 Curriculum



SKILL #1: Suture Target Level One (*)

Activity: four sutures are placed with one surgeons knot and two throws each in the suture target.

Time for Completion: 10 minutes

Objective: To combine the previously learned suturing skills and place Intra-corporeal sutures.

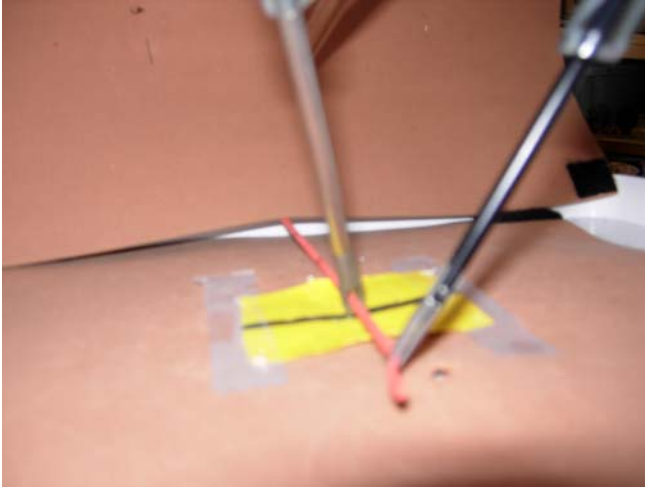
(*) Categorical residents have the option to substitute the FLS Intra-corporeal exercise



SKILL #2: Clip Applier Drill

Activity: Select and secure one of the looped rubber tubing targets
Place one 10 mm clip on the first marked line and one 10 mm clip on the third target line
Divide the tubing at the second target line
Repeat this process until all four rubber tubing loops have been properly clipped and separated

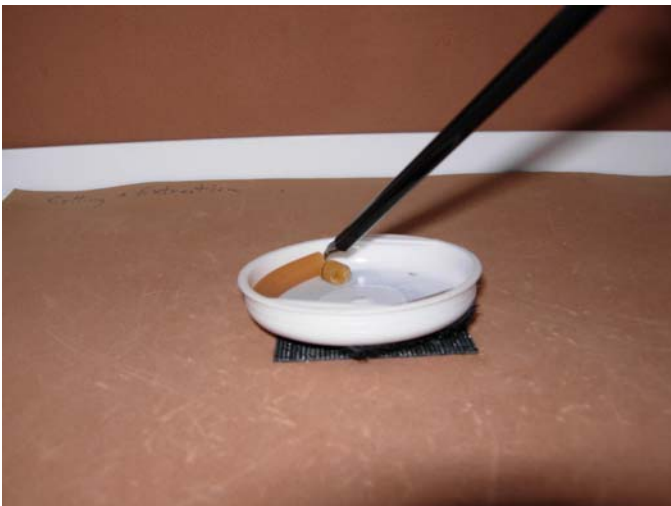
Time for Completion: 5 minutes



SKILL #3: Swim Move Clip Drill

Activity: An elastic band with three clip lines is moved toward the user until clip line is overlying the line drawn on the floor of the trainer. The clip is applied and the band is advanced under constant tension to the next clip line. This process is repeated until 3 clips have been placed.

Time for Completion: 3 minutes



SKILL #4: Cutting and Extraction

Activity: A length of rubber tubing which is marked into 6 segments at one end is placed in a plastic tray with a lip at the top and the bottom. The segments are to be separated one at a time from the rest of the tubing and extracted from the trainer through the 12mm port. If control of the segment is lost during cutting or extracting this is counted as an error. If the long segment of the tubing escapes from the confines of the tray this is also an error. The task must be completed with no errors in the required time.

Time for Completion: 6 minutes

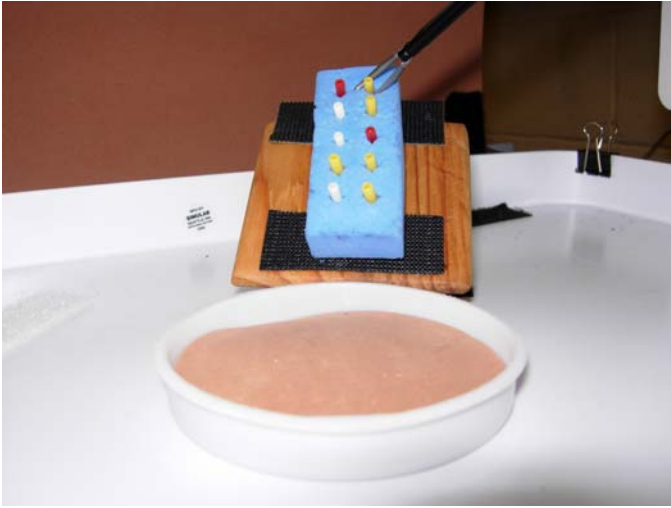


SKILL #5: Cannulation Drill Level Two

Activity: Segment A: The tubing is set at a 45 degree incline and a 45 degree angle and the cannulation must be completed with the dominant hand.

Segment B: The tubing is set at a 45 degree incline and a 45 degree angle and the cannulation must be completed with the non-dominant hand.

Time for Completion of each segment: 40 seconds



SKILL #6: Pegboard Level Two

Activity: Segment A: The pegboard will be set at a 45 degree incline and a 45 degree angle to the tray. The pegs must be removed from the pegboard and returned to it with the dominant hand.

Segment B: The pegboard will be set at a 45 degree incline and a 45 degree angle to the tray. The pegs must be removed from the pegboard and returned to it with the non-dominant hand.

Time for Completion: 4 minutes for each segment



SKILL #7: Ring of Fire

Activity: Using a short length of suture and two needle drivers, the needle is to be passed through the small eyelet in a ring of 5 target blocks. The circuit is first traversed in a counter-clockwise direction and then reversed at the 12:00 position and the task repeated in the clockwise direction. If the needle is dropped or a target avulsed, this is a task ending error.

Time for Completion: 4 minutes

A Typical Lab Session

Center for Advanced Training and Simulation (Open M-F 8:30 AM to 5:30 PM)

Part of your responsibility in the coming year will be to go to the Center for Advanced Training and Simulation (CATS) and demonstrate your competency in performing the basic skills exercises. The training center is located in Room 109 in the College of Nursing Building. (IN HALLWAY DIRECTLY BEHIND STARBUCKS)

When you arrive at the center, please inform the lab manager what skills exercise or simulation you want to practice. You will be given a log in sheet on which to print your name and mark down the time and date. Also, so we can track your improvement information, we are asking that you record the elapsed time for each run of the drill you are practicing. When you have successfully completed the task two times consecutively and you are confident of your skills on the set up, notify the lab manager and he will time your qualification run. If you are successful on this timed run the manager will initial your log sheet confirming your competency for that skill and you can move on to the next if your schedule permits. If you fail on your qualification run, you must complete the task again on your own and then retry the qualification run. When you have finished your skills session, you must record your time out on the log in sheet and check that your name, the date, the time in, the time out, and times for your skill runs have been entered. If the log in sheet is not completed correctly, you will not get credit for the work you have done during that session.

It is the center's responsibility to have at least two sets of all the required training exercises available at all times. The set up you request will be retrieved and installed while you are given a briefing that will explain what is involved in the performance of the exercise, pertinence of the exercise and the required performance time you will need to achieve in order to be rated as competent. You will then be allowed as much practice time as you want.

Your personal progress records will be reported to Dr. Roth, Dr. Iocono and Dr. Strup on a quarterly basis and will be available for review by the program director.

Requirement Statement

All General Surgery categorical, preliminary Surgery interns, and all interns rotating on the Green Surgery service are required to complete the PGY1 MIS skills curriculum. General Surgery PGY2 residents must complete and demonstrate proficiency in the MIS PGY2 skills curriculum. Failure to complete the assigned curricular activities will result in an unsatisfactory evaluation. Additionally, Categorical interns and PGY2 residents who fail to meet these proficiency requirements will not receive the incremental pay increase associated with promotion to the next level of residency. There should be adequate time to achieve these goals while rotating in the Pediatric surgery or Green surgery services each year. However, these tasks can be done at any time of the year. If you experience any difficulty in accessing the MIS training lab, please notify Jim Hoskins, Dr. Roth, Dr. Iocono, or Dr. Endean.

For those who show outstanding performance and initiative there will be many positive incentives.

Technical Services Provided by CATS

1. Creation and editing of conference video presentations
2. Creation of Narrated Training Case (NTC) DVDs from live OR sessions
3. Creation of streaming tutorials for web delivery
4. Maintenance of MIS research databases
5. MIS Web site
6. MIS training Web links
7. Amira 3D exploration and impact on the preoperative decision making process
8. 3D visualizations of anatomical models from CT scans
9. 3D interactive training programs (TSP)
10. Assistance in prototyping MIS instrument design and training aids
11. High resolution and High Definition CD, DVD production
12. High resolution color scanner for images and slides
13. Advanced video editing skills using Pinnacle software to assist physicians with multimedia projects.
14. Video tape dubbing and duplication facility

Resources Available for Your Use at the CATS

1. Ten skill stations comprised of a trainer box, laparoscope support arm, 1088 camera, 30 degree 10 mm laparoscope, fiber-optic light source, high-resolution flat-panel monitor.
2. Rapid setup modules for all of the basic skills
3. Two copies of models to support each required laparoscopic skills drill
4. A full array of laparoscopic instruments including Maryland dissectors, laparoscopic scissors, graspers, clip applicators, staplers, Endostitch instruments, and needle drivers
5. A wide screen plasma monitor viewing station where DVD recordings of earlier procedures can be viewed. There are several versions of all the more common laparoscopic operations as well as several examples of advanced procedures.
6. Four Dell multimedia PCs , three Dell wireless capable laptops, and 1 Mac G5 with a 19 in. (23 in. diagonal) flat-panel monitor
7. Windows video production editing suite featuring Pinnacle studio software
8. Two Endostitch practice stations
9. Sound dubbing and narration studio for both platforms
10. Amira station where target structures visualized on CT can be converted to 3-D models in minutes and prepared for publication quality graphics with labels and dimensions included
11. Full-color graphics and text scanner. The station also includes OCR (optical character recognition) software compatible with Microsoft Word
12. Three Dell laptops, a Hi-8 camcorder, and a digital video Mini DVD disk camcorder are available for check out for short-term use

Hard Copy Resources Available for Your Use at the CATS

The following hard copy texts and manuals are available:

Sabiston textbook of surgery pocket companion

Minimally invasive surgical procedures and anatomy which includes

surgical anatomy in technique or pocket manual and the sages manual: fundamentals of laparoscopy and GI endoscopy

Surgery: a competency-based companion

Step by step bariatric atlas

Atlas of surgical stapling

Atlas of thoracic surgical techniques

Essentials of general surgery

Best practices in surgical education: the training of registrars and residents

The American College of surgeons surgical education and self-assessment program

The color Atlas of human anatomy

Instructional DVD Resources Available for Your Use at the CATS

Essure physician training

The DVD journal of operative surgery reality surgery

Lap surgical systems multiple instrument guide demo disk

Costasis Surgical hemostat interactive presentation

The scientific basis of wound closure

Colorectal procedures including Left hemicolectomy by Dr. William Timmerman

Right hemicolectomy by Dr. Brian Butler

Colostomy takedown by Dr. Glenn Parker

Lap disk port placement tool

The virtual prostate

Narrated Teaching Case (NTC) Resources Available for Checkout from the CATS
Green Surgery

1. Laparoscopic cholecystectomy
2. Laparoscopic appendectomy
3. Laparoscopic adrenalectomy
4. Laparoscopic splenectomy
5. Laparoscopic gastrectomy
6. Laparoscopic colectomy
7. Small bowel resection
8. Laparoscopic Nissen procedure
9. Laparoscopic Heller myotomy
10. Hernia repair with laparoscopic separation of components
11. Gastric bypass (Roux-en-Y)
12. Laparoscopic hiatal hernia repair
13. Laparoscopic paraesophageal hernia repair
14. Laparoscopic inguinal hernia repair
15. Laparoscopic ventral hernia repair
16. Laparoscopic pancreatectomy
17. Laparoscopic adrenal pheochromocytectomy
18. Laparoscopic enucleation of pancreatic mass
19. Laparoscopic redo Nissen
20. Laparoscopic gastric resection
21. Placement of gastric E-stim
22. Repair of pelvic hernia
23. Hand Assisted low anterior bowel resection
24. Hand Assisted laparoscopic right colectomy
25. Hand Assisted laparoscopic total abdominal colectomy
26. Laparoscopic right hemicolectomy
27. Laparoscopic rectopexy
28. Laparoscopic small bowel resection

Pediatric Surgery

- 51. Pyloromyotomy**
- 52. Nissen fundoplication**
- 53. Splenectomy**
- 54. Rigid bronchoscopy and thoracoscopic repair**
- 55. Laparoscopic assisted pull-through**
- 56. De-roofing ovarian cyst**
- 57. Tumor biopsy staging**
- 58. Thoracoscopic removal of ectopic liver**
- 59. Laparoscopic cholecystectomy**
- 60. Nuss procedure**
- 61. Excision of ovary**
- 62. Thoracoscopic sympathectomy**
- 63. Removal of large mass from splenic
parenchyma**

Urologic Surgery

- 71. Laparoscopic donor nephrectomy**
- 72. Hand assisted laparoscopic partial nephrectomy**
- 73. Laparoscopic prostatectomy**
- 74. Laparoscopic adrenalectomy**
- 75. Laparoscopic pyeloplasty**
- 76. Laparoscopic radical nephrectomy**
- 77. Retroperitoneal nephrectomy**
- 78. Robot assisted (da Vinci) prostatectomy**
- 79. Transurethral resection of prostate (TURP)**
- 80. Cystectomy with neobladder creation**
- 81. Deep and superficial inguinal node removal**

Plastic Surgery

- 91. Endoscopic free flap harvest**
- 92. Superficial parotidectomy**

Center for Advanced Training and Simulation, Room 109, College of Nursing Building



Construction was completed in October of 2005 of the Center for Advanced Training and Simulation. The expansion resulted in an increase in number of skills stations from three to ten. This allows us to have permanent configurations on the stations and eliminate setup time. Laboratory space has increased by about four fold. All computers and electronic equipment have been upgraded to current state of the art and two validated commercial laparoscopic trainers were acquired. A conference room is available that has full telesurgery capabilities and allows live look-ins on surgery in progress when pre-approved by the attendings.



Web Site URLs

MIS main web page <http://www.mc.uky.edu/mis>

Contact Information for Lab Manager

Email jdhosk00@email.uky.edu

Voice line (859) 323-5450

Office Location 109 C (College of Nursing Building)

Pager (859) 330-6001