I. **Rotation Description**

The purpose of the VCOM Department of Surgery is to provide a high quality surgical educational experience. The Mission of the College is to provide medical education and research that prepares globally-minded, community-focused physicians and to improve the health of those most in need.

Third year medical student clerkships are offered by the majority of our regional hospitals. The general surgery rotation is four weeks in duration. The student acts as a surgical extern as he/she rotates with the Discipline. He/she learns how to do a surgical history, assess the patient by Goldmans criteria, provide pre- and post-op care, make rounds, write orders, and attend all conferences that are for surgical cases.

The Department of Surgery faculty believe the surgical disciplines have important roles in medical education and the provision of healthcare and that educational and healthcare advances are founded upon sound clinical and basic research.

During the third year surgery rotation, students expand their knowledge of surgical conditions and gain the ability to apply this knowledge in the clinical setting. The curriculum is taught through Med-U Wise-MD videos, assigned readings, and through one-on-one student-preceptor interaction in the clinical setting. Students are expected to complete their assignments for both surgery and the longitudinal OMM course. The practice of surgery occurs in the outpatient office setting and in the inpatient setting. Due to the variety
of practice opportunities and formats in surgery, students should review their specific site instructions for a more detailed description of their specific practice setting.

II. Course Goals and Objectives

A. Goals of the Course

1. Practice – The student will become familiar with the characteristics of the practice of general surgery, including the knowledge base required, manner of patient communications, intermittent patient encounters, and aspects of clinical reasoning, lifestyle considerations, and continuing education issues.
2. Surgical / Clinical Reasoning – The student will develop knowledge and skills in learning to differentiate between elective, urgent, and emergent surgical clinical problems from the perspective of clinical reasoning skills.
3. Communication – The student will develop the ability to transmit information through a concise, accurate, and timely oral presentation, as well as documenting their History and Physical and recording progress notes in the hospital chart where applicable.

B. Objectives of the Course

1. To provide a working knowledge of surgical conditions of patients a primary care physician is likely to encounter in daily practice.
2. To provide a challenging and interesting introduction to surgery as a choice to practice, recognizing the need for general surgeons in rural and underserved areas.
3. To broaden the students’ knowledge of surgical disease and procedures.
4. To provide clinical research in new techniques and surgical devices that will enhance the health of all humans.
5. To foster compassionate and altruistic care by participation in our Appalachian and International Medical Missions.
6. To promote the development of surgical technical skills in students and residents including:
   a. Basic surgical instruments, knots and ties
   b. Elementary wound closure and local anesthesia
   c. Subcutaneous and fascial closures
   d. Wound debridement, irrigation and drainage, securing tubes, Z plasties, VY plasties, rotation flaps
7. To become familiar with more complicated procedures including skin grafts, nerve, vessel and tendon repair.
8. To become familiar with the surgical specialties and how they are practiced, including:
   a. Otorhinolaryngology
   b. Ophthalmology
   c. Neurosurgery
   d. Cardiovascular Surgery
   e. Orthopedics
   f. Urology
   g. Plastic Surgery

C. Clinical Performance Objectives

While the end-of-rotation exam is derived from the didactic curriculum and objectives described above in the “Clinical Modules – Required Curriculum” section, the end-of-rotation evaluation completed by your surgery preceptor is based on clinical core competencies. These core competencies reflect student performance in 6 key areas: communication, problem solving, clinical skills, medical knowledge, osteopathic medicine and professional and ethical considerations. Your end-of-rotation evaluation from your preceptor will be based directly on your performance in these 6 core competencies as described below.
1. **Communication** - the student should demonstrate the following clinical communication skills:
   a. Effective listening to patient, family, peers, and healthcare team
   b. Demonstrates compassion and respect in patient communications
   c. Effective investigation of chief complaint, medical and psychosocial history specific to the rotation
   d. Considers whole patient: social, spiritual & cultural concerns
   e. Efficiently prioritizes essential from non-essential information
   f. Assures patient understands instructions, consents & medications
   g. Presents cases in an accurate, concise, well organized manner

2. **Problem Solving** – the student should demonstrate the following problem solving skills:
   a. Identify important questions and separate data in organized fashion organizing positives & negatives
   b. Discern major from minor patient problems
   c. Formulate a differential while identifying the most common diagnoses
   d. Identify indications for & apply findings from the most common radiographic and diagnostic tests
   e. Identify correct management plan considering contraindications & interaction

3. **Clinical Skills** - the student should demonstrate the following problem solving skills:
   a. Assesses vital signs & triage patient according to degree of illness
   b. Perform good auscultory, palpatory & visual skills
   c. Perform a thorough physical exam pertinent to the rotation

4. **Osteopathic Manipulative Medicine** - the student should demonstrate the following skills in regards to osteopathic manipulative medicine
   a. Apply osteopathic manipulative medicine successfully when appropriate
   b. Perform and document a thorough musculoskeletal exam
   c. Utilize palpatory skills to accurately discern physical changes that occur with various clinical disorders
   d. Apply osteopathic manipulative treatments successfully

5. **Medical Knowledge** – the student should demonstrate the following in regards to medical knowledge
   a. Identify & correlate anatomy, pathology and pathophysiology related to most disease processes
   b. Demonstrate characteristics of a self-motivated learner including demonstrating interest and enthusiasm about patient cases and research of the literature
   c. Are thorough & knowledgeable in researching evidence based literature
   d. Actively seek feedback from preceptor on areas for improvement
   e. Correlate symptoms & signs with most common disease

6. **Professional and Ethical Behaviors** - the student should demonstrate the following professional and ethical behaviors and skills:
   a. Is dutiful, arrives on time & stays until all tasks are complete
   b. Consistently follows through on patient care responsibilities
   c. Accepts & readily responds to feedback, is not resistant to advice
   d. Assures professionalism in relationships with patients, staff, & peers
   e. Displays integrity & honesty in medical ability and documentation
   f. Acknowledges errors, seeks to correct errors appropriately
   g. Is well prepared for and seeks to provide high quality patient care
   h. Identifies the importance to care for underserved populations in a non-judgmental & altruistic manner
III. Rotation Design

A. Educational Modules
Educational modules using lectures, cases, and other forms of delivery are used for third year curriculum. Each student must complete a post-rotation exam to assure that the expected basic content or medical knowledge has been acquired during the rotation. In addition to the experiences received in the clinical training sites, students are expected to read the content of the assigned textbooks and online materials in order to complete the entire curriculum assigned for the clinical module.

B. Formative Evaluation
Student competency-based rating forms are used by the preceptor to evaluate each student’s clinical skills and the application of medical knowledge in the clinical setting. These forms are only completed by the clinical faculty member or preceptor. Performance on rotations will be evaluated by the primary clinical faculty member precepting the student. VCOM uses a competency-based evaluation form which includes the osteopathic core competencies. These competencies evaluated include:

- Medical knowledge;
- Communication;
- Physical exam skills;
- Problem solving and clinical decision making;
- Professionalism and ethics;
- Osteopathic specific competencies; and
- Additional VCOM values.

Student competency is judged on clinical skill performance. Each skill is rated as to how often the student performs the skill appropriately (i.e. unacceptable, below expectation, meets expectation, above expectation, exceptional).

C. Logging Patient Encounters and Procedures
Students are required to maintain a log to identify the procedures performed and the number of essential patient encounters in the CREDO application. All students must review these logs with their preceptors prior to the end of the rotation period, as required by the final preceptor evaluation form. Students are encouraged to periodically review their CREDO entries with their preceptor during the rotation period.

IV. Credits
5 credit hours

V. Course Texts
A. Required Textbooks
  Available in electronic format on the VCOM Library – on LWW Osteopathic Medicine Collection

B. Recommended Textbooks
VI. Course Grading and Requirements for Successful Completion

A. Requirements

- Attendance according to VCOM and preceptor requirements as defined in the College Catalog and Student Handbook.
- Completion of all Clinical Modules in the required curriculum.
- Completion of the Aquifer Wise-MD cases from the Required Curriculum (6 hours, 20 minutes).
  - The Summary of Case Credit button must be clicked at the end of each case in order to receive credit for the case. Be aware that the videos contain “Additional Information” sections which will also serve as material for testing.
  - Register for the Aquifer Wise-MD cases:
    - Go to https://www.aquifer.org
    - If you are a first-time user:
      - Click “Sign in” in the top right corner.
      - Enter your institutional email address in the email box. Then click on the “Register” button at the bottom of the page.
      - You will be sent an email with a link to complete registration. Upon receipt of the registration email, click on the link “Click Here“. You will then be brought to the profile setup page. An email will be sent to you. Follow the instructions in the email to setup your account.
      - You will be asked to fill in your profile information and set up a password (8 character minimum). Once you have completed your user profile and created a password, you will receive a welcome email with links to useful information and guides. You would also be logged into the Aqueduct learning management system.
      - Once your profile is completed successfully, you will be brought to your institution’s Course page.
      - You will also receive a “Thank you for registering with Aquifer” email with links to tools, resources, and Aquifer news.
    - If you are a returning user:
      - Click “Sign in” in the top right corner.
      - Please log in with your institutional email and account password and click “Sign In”.
- Logging Patient Encounters and Procedures in CREDO:
  - Students are required to log all patient encounters and procedures into the CREDO application. All students must review these logs with their preceptors prior to the end of the rotation period, as required by the final preceptor evaluation form. Students are encouraged to periodically review their CREDO entries with their preceptor during the rotation period. These reviews should stimulate discussions about cases and learning objectives, as well as identify curriculum areas the student may still need to complete. CREDO can be accessed at: https://credo.education/
- Rotation Evaluations:
  - Student Site Evaluation: Students must complete and submit at the end of rotation. See the VCOM website at: http://intranet.vcom.edu/clinical/Login/index.cfm?fuseaction=LoginInfo&LoginPage=ViewStudentSchedule to access the evaluation form.
  - Third-Year Preceptor Evaluation: It is the student's responsibility to ensure that all clinical evaluation forms are completed and submitted online or turned in to the Site Coordinator or the Clinical Affairs Office at the completion of each rotation. Students
should inform the Clinical Affairs Office of any difficulty in obtaining an evaluation by the preceptor at the end of that rotation. See the VCOM website at: www.vcom.edu/academics/clinical-forms to access the evaluation form.

- Mid-Rotation Evaluation: The mid-rotation evaluation form is not required but highly recommended. See the VCOM website at: www.vcom.edu/academics/clinical-forms to access the mid-rotation evaluation form.

- Completion of the Surgery Learning Contract. Your learning contract must be submitted to the Surgery Administrative Assistant on your campus at the end of your rotation.

- Successful completion of the end-of-rotation written exam. The end-of-rotation exam questions will be derived directly from the specific objectives presented in each of the below modules.

B. Grading

Students must pass both the "module" and "rotation" portions of the course. All rotations have a clinical rotation grade and clinical modules/exam grade. The clinical rotation grade uses the Honors, High Pass, Pass, Fail system; these grades are not calculated in the GPA. The rotation modules are assigned an exam grade.

<table>
<thead>
<tr>
<th>Clinical Grading Scale and GPAs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OMS 3 End-of-Rotation Exam Grades</strong></td>
</tr>
<tr>
<td>A 90-100</td>
</tr>
<tr>
<td>B+ 85-89</td>
</tr>
<tr>
<td>B 80-84</td>
</tr>
<tr>
<td>C+ 75-79</td>
</tr>
<tr>
<td>C 70-74</td>
</tr>
<tr>
<td>F &lt;70</td>
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</tbody>
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B. Remediation

Students who fail one or more rotations or one or more end-of-rotation exams twice will be referred to the Promotion Board. If a student fails the professionalism and ethics portion of the evaluation he or she may be removed from the rotation and referred to the Professionalism and Ethics Standards Board. No grade will be changed unless the Office of Clinical Affairs certifies to the Registrar, in writing, that an error occurred or that the remediation results in a grade change.

- **Failure of an End-of-Rotation Exam**
  Students must pass each end of rotation exam with a C (70%) or better to receive a passing grade for the clinical medical knowledge module. Students who fail an end of rotation exam but pass the clinical rotation evaluation component have a second opportunity to pass the exam within 28 days of notification. If the student passes the remediation exam, the remediated exam grade will be the grade recorded on the transcript and be GPA accountable. If the student fails the end of rotation exam a second time, the student will receive an “F” grade for the rotation and will be brought before the Promotion Board. If the student is allowed to repeat the rotation, all components of the rotation must be repeated. In this case, the “F” grade remains the permanent grade for the initial rotation and the student will receive a new grade for the repeated rotation. The grade will be recorded in a manner that designates that it is a repeated rotation (eg. R-pass).

- **Failure of a Rotation**
  If a student fails the clinical rotation evaluation the student will receive an “F” grade for the rotation and will be brought before the Promotion Board. If the student is allowed to repeat the rotation, all components of the rotation must be repeated. In this case, the “F” grade remains
the permanent grade for the initial rotation and the student will receive a new grade for the repeated rotation. The grade will be recorded in a manner that designates that it is a repeated rotation (eg. R-pass).

- **Failure to Make Academic Progress**
  Repeated poor or failing performance in a specific competency area on the evaluation form across more than one rotation may also be a reason for a required remediation at the discretion of the Associate Dean for Clinical Affairs in consultation with the clinical chair, the preceptor, and the Promotion Board. In general, rotations should show a progression of improvement in clinical performance. Those students who receive a mere “Pass” on multiple rotations and/or maintain a “CP” on one or more rotations after final grades are received, will be counseled about overall performance and may be required to complete an additional rotation at the end of the year. Any additional curriculum or required remediation will be based on the performance measure. In general, rotations should show a progression of improvement in performance. Those students who continually score in the "unsatisfactory" category or repeated "performs some of the time, but needs improvement" consistently and do not improve over time or who fail one or more rotations may be deemed as not making academic progress and, as a result, may be referred to the Promotion Board and be required to complete additional curriculum. Multiple rotation failures may result in dismissal.

Poor ratings on the clinical rotation evaluation in the professional and ethical areas of the assessment are addressed by the Associate Dean for Clinical Affairs. The Associate Dean may design a remediation appropriate to correct the behavior or if needed may refer the student to the Professionalism and Ethics Board. In the case of repeated concerns in a professional and/or ethical area, the Associate Dean for Clinical Affairs may refer the student to the Campus Dean for a Behavioral Board or Promotion Board hearing. The Campus Dean will act upon this referral depending on the severity and the area of the performance measure. Poor ratings in this area will include comments as to the exact nature of the rating. Repeated poor or failing performance in a specific competency area on the evaluation form across more than one rotation may also be a reason for a required remediation at the discretion of the Associate Dean for Clinical Affairs in consultation with the clinical chair and the preceptor, and the Promotion Board. In general, rotations should show a progression of improvement in clinical performance.

### VII. Academic Expectations

Grading policies, academic progress, and graduation requirements may be found in the *College Catalog and Student Handbook* at: [http://www.vcom.edu/handbooks/catalog/index.html](http://www.vcom.edu/handbooks/catalog/index.html)

#### A. Attendance

Attendance for all clinical rotation days is mandatory. The clinical site will determine the assigned days and hours to be worked within the rotation period. Students are required to attend any orientation the clinical site sets as mandatory prior to any rotation or the clinical year. The orientation sessions vary by site and are required to maintain assignment to the site. Although the clinical site determines the assigned days and hours to be worked, VCOM has established the following guidelines:

- 4 week rotations may not be less than 20, eight hour days for a total of a minimum of 160 hours and often average 180 hours or greater.
  - Students may be required to work up to 24 days in a 4-week period or 25 days in a 1-month rotation, including call and weekends at the discretion of the clinical site.
  - If the clinical site requires longer daily hours or shift work, the student may complete the required hours in less than 20 days with the following specifications:
    - Students should not work greater than 12 out of every 14 days
    - Student should not work more than 12 hours daily, exclusive of on-call assignments.
- If on-call hours are required, the student should not be on duty for greater than 30 continuous hours.
- Students may be required to work weekends but in general should have 2 weekends per month free and 2 of 7 days per week free.
- 2 week rotations may not be less than 10, eight hour days for a total of a minimum of 80 hours and often average 100 hours or greater.
  - If the clinical site requires longer daily hours or shift work, the student may complete the required hours in less than 10 days with the following specifications:
    - Students should not work greater than 12 out of every 14 days.
    - Students should not work more than 12 hours daily, exclusive of on-call assignments, and may not complete the 2 week rotation in less than 1 week.
    - If on-call hours are required, the student should not be on duty for greater than 30 continuous hours.
    - Students may be required to work weekends but in general should have 2 of 7 days per week free.

It should be noted that preceptors will have final determination of the distribution of hours, which may vary from this policy but should not in general be less than 160 hours for a 4 week rotation or less than 80 hours for a 2 week rotation. The institution’s DSME and assigned clinical faculty determine clinical duty hours. Students are responsible to the assigned clinical faculty and are expected to comply with the general rules and regulations established by the assigned clinical faculty, and/or the core hospital(s), or facility associated with the rotation.

The average student clinical day begins at 7 am and ends at 7 pm. Students are expected to work if their assigned clinical faculty is working. Some rotations assign students to shifts and in such cases the student may be required to work evening or night hours. If on-call hours are required, the student must take the call; however, the student should not be on duty for greater than 30 continuous hours. Students may be required to work weekends, but in general should have two weekends per month free and two of seven days per week free. Student holidays are determined by the clinical site and follow those of other students and/or residents from the clinical site. Students must be prompt and on time for the clinical rotation.

Students are expected to arrive on time to all clinical rotations. If a student is late, he or she must notify the site coordinator and the preceptor prior to or at the time they are scheduled arrive. Students must have a reason for being late such as illness or vehicle issues and it is not anticipated that this would occur more than one occasion AND it is important the student call in prior to being late. Repeated tardiness is considered as unprofessional behavior and is a reason for dismissal from a rotation. Students with repeated tardiness will be referred to the PESB. Tardiness is defined as more than 5 minutes after the scheduled time the preceptor designates as the expected arrival time.

The Office of Clinical Affairs requires that the medical student complete and submit an Excused Absence Clinical Rotations Approval form for any time "away" from clinical rotations. Forms are available at: www.vcom.edu/academics/clinical-forms. The student must have this form signed by their preceptor and others designated on the form to obtain an excused absence and must be provided to the DSME and the Office of Clinical Affairs through the site coordinator. The form must be completed prior to the beginning of the leave. If an emergency does not allow the student to submit this prior to the absence, the “Excused Absence Clinical Rotations Approval” form must be submitted as soon as the student is physically able to complete the form. In addition to completion of the form, students must contact the Department of Clinical Affairs, the Site Coordinator, and the preceptor’s office by 8:30 AM of the day they will be absent due to an illness or emergency. No excused absence will be granted after the fact, except in emergencies as verified by the Associate Dean for Clinical Affairs.
Regardless of an excused absence, students must still complete a minimum of 160 hours for a 4 week rotation and 80 hours for a 2 week rotation in order to pass the rotation. Any time missed must be remediated during the course of the rotation for credit to be issued. Students may remediate up to four missed days or 48 hours missed during any rotation period by working on normal days off. OMS 3 and OMS 4 students who have any unexcused absences will be referred to the PESB.

VIII. Professionalism and Ethics
It is advised that students review and adhere to all behavioral policies including attendance, plagiarism, dress code, and other aspects of professionalism. Behavioral policies may be found in the College Catalog and Student Handbook at: [http://www.vcom.edu/handbooks/catalog/index.html](http://www.vcom.edu/handbooks/catalog/index.html)

A. VCOM Honor Code
The VCOM Honor Code is based on the fundamental belief that every student is worthy of trust and that trusting a student is an integral component in making them worthy of trust. Consistent with honor code policy, by beginning this exam, I certify that I have neither given nor received any unauthorized assistance on this assignment, where “unauthorized assistance” is as defined by the Honor Code Committee. By beginning and submitting this exam, I am confirming adherence to the VCOM Honor Code. A full description of the VCOM Honor Code can be found in the College Catalog and Student Handbook at: [http://www.vcom.edu/handbooks/catalog/index.html](http://www.vcom.edu/handbooks/catalog/index.html)

IX. Pre-requisites to a Successful Clerkship
Prior to beginning the rotation it would be advisable to review the Video on Surgery Scrubbing Technique found on VCOM-TV.

X. Clinical Modules

1. Acute Abdomen
   **Reading Assignment:** Sabiston Textbook of Surgery, pages 1120-1136
   **Learning Objectives:**
   i. Define what is meant by Acute Abdomen
   ii. Discuss the anatomy of the region
   iii. Describe the investigative studies used in the workup of the acute abdomen
   iv. Discuss the role of laparoscopy
   v. Develop a differential diagnosis for a patient with an acute abdomen
   vi. Describe the algorithm for management of the acute abdomen
   vii. Describe the indications and preparation for surgical exploration
   viii. Discuss pre-operative management
   ix. Discuss the preparation for emergency surgery

2. Adrenal Masses
   **Reading Assignment:** Sabiston Textbook of Surgery, pages 963-994, 996
   **Online Case:** Aquifer Wise-MD – Adrenal Adenoma
   **Learning Objectives:**
   i. Define the work-up of an adrenal mass noted incidentally (incidentaloma) on a CT scan
   ii. Define the basic physiology of aldosterone secreting tumors (Conn syndrome)
   iii. Define the basic physiology of pheochromocytoma. Understand the basic diagnostic work-up.
   Learn the rule of 10’s as a mnemonic tool (10% malignant, 10% bilateral, 10% extra-adrenal, 10% familial p980). Define which MEN syndrome is related to pheochromocytoma
   iv. Define glucocorticoid physiology and the difference between Cushing syndrome and Cushing disease
   v. Identify the characteristics of adrenal cortical carcinomas (size, symptoms, CT appearance)
   vi. Identify the indications for, and the risks and benefits of, biopsy of an adrenal mass
vii. Compare open versus laparoscopic adrenalectomy and define the major complications of adrenal surgery and the anatomy of the region

3. Anorectal Disease

Reading Assignment: Sabiston Textbook of Surgery, pages 1394-1415

Online Case: Aquifer Wise-MD - Anorectal Disease

Learning Objectives:
   i. Identify the important anatomical landmarks of the anorectal area
   ii. Define the causes and treatment of pelvic floor disorders, including incontinence
   iii. Define the causes and treatment of pelvic floor disorders, including:
       a. urinary obstruction
       b. rectal prolapse
   iv. List a differential diagnosis for a patient with perianal pain
   v. Identify the signs, symptoms and treatment plan, including non-operative intervention and timing, for the following conditions. Discuss the characteristic history including, character and duration of complaint, presence or absence of associated bleeding and relationship of complaint to defecation. Indicate in which part of exam (external, digital, anoscopy, or proctoscopy) these findings are identified.
       a. Hemorrhoids
       b. Anal fissures
       c. Perianal fistulas
       d. Perianal abscess
       e. Pilonidal disease
       f. Hidradenitis
       g. Perianal condyloma
       h. Crohn’s Disease
   i. Anal tumors

4. Appendicitis

Reading Assignment: Sabiston Textbook of Surgery, pages 348, 1296-1309

Online Case: Aquifer Wise-MD - Appendicitis

Learning Objectives:
   i. Describe the anatomy of the appendix and its relation to other abdominal and retroperitoneal structures
   ii. Describe the pathophysiology and clinical presentation of acute appendicitis. Discuss its diagnosis and differential diagnosis (be specific regarding different age groups and male vs. female)
   iii. Describe the diagnostic algorithm for appendicitis
   iv. Describe the management of uncomplicated appendicitis
   v. Discuss perforated appendix and an appendiceal abscess
   vi. Discuss chronic or recurring appendicitis
   vii. Describe appendicitis occurring in the elderly.
   viii. Describe the diagnosis and treatment of appendiceal cancer.
   ix. Recognize the special physical signs that are relevant to appendicitis:
       a. McBurney’s Point tenderness
       b. Positive Rovsing’s Sign
       c. Positive Psoas Sign
5. **Anesthesia**

**Reading Assignment:** Sabiston Textbook of Surgery, pages 368-384

**Learning Objectives:**

i. Describe preoperative evaluation for the patient undergoing anesthesia

ii. Describe airway assessment

iii. Describe assessment of physical status using the ASA classification

iv. Recognize the risks of death or major complications with anesthesia

v. Discuss the pharmacology and risks of local anesthetics

vi. Describe the factors behind selection of anesthetic techniques.

vii. Identify the benefits and risks among the regional anesthetic techniques including Local, Spinal, Epidural and peripheral blocks.

viii. Describe “Conscious Sedation”, its benefits and risks.

ix. Recognize malignant hyperthermia and its treatment

x. Recognize potential complications in post-anesthesia care:
   a. respiratory complications
   b. nausea and vomiting
   c. hypothermia
   d. circulatory complications

6. **Bowel Obstruction**

**Reading Assignment:** Sabiston Textbook of Surgery, pages 306-307, 347-348, 1247-1254, 1336-1339

**Online Case:** [Aquifer Wise-MD – Bowel Obstruction](#)

**Learning Objectives:**

i. Describe the pathophysiology behind SBO and its typical etiologies

ii. Discuss the clinical manifestations and diagnosis of SBO including:
   a. history
   b. physical examination
   c. radiologic and laboratory studies

iii. Describe the causes of and the terms used to describe ileus and postoperative bowel obstruction

iv. Discuss the nuances of simple versus strangulated obstruction

v. Describe diagnostic modalities for diagnosing SBO.

vi. Discuss treatment of SBO to include:
   a. fluid resuscitation and antibiotics
   b. tube decompression
   c. operative management

vii. Describe the unique aspects of etiology, diagnosis, and treatment of SBO in the geriatric population.

viii. Discuss the presentation of patients with postoperative small bowel obstruction (SBO)

ix. Discuss management of specific SBO issues including:
   a. recurrent intestinal obstruction
   b. acute postoperative obstruction
   c. ileus

x. Discuss the classification, diagnosis and treatment of Large Bowel Obstruction (LBO) and pseudo obstruction

xi. Describe Ogilvie’s Syndrome

xii. Discuss the diagnosis and treatment of LBO.
7. **Burn Management**

*Reading Assignment:* Sabiston Textbook of Surgery, pages 505-529  
*Online Case:* Aquifer Wise-MD – Burn Management

**Learning Objectives:**

i. Describe the more common types of burns and the most common types of burns and their mechanisms of injury.  
ii. Recognize the role of education and prevention.  
iii. Recognize the difference between chemical, electrical and thermal injuries  
iv. Define first, second, and third degree burns  
v. Define emergency care of first and uncomplicated second degree burns  
vi. Define the rule of Nines for burn assessment  
vii. Define criteria for transfer to a major burn center  
viii. Recognize the rationale for burn resuscitation for major burns  
ix. Recognize the Parkland and similar formulas and recognize the magnitude of fluid that may be required to manage a major burn  
x. Recognize inhalational injury - the importance of careful assessment of patients burned in closed spaces (apartments, garages, etc.)  
xii. Recognize the basics of treatment of chemical burns in the emergency setting

8. **Cholecystitis and Biliary System Disease**

*Reading Assignment:* Sabiston Textbook of Surgery, pages 1482-1512  
*Online Case:* Aquifer Wise-MD – Cholecystitis

**Learning Objectives:**

i. Describe the anatomical arrangement of the hepatobiliary system  
ii. Discuss the general considerations of biliary tree disease, including:  
   a. biliary colic  
   b. fever  
   c. jaundice  
   d. cholangitis  
iii. Identify pertinent historical and physical examination facts related to gallbladder disease, including:  
   a. gallstones  
   b. acute and chronic cholecystitis  
   c. emphysematous cholecystitis  
   d. gallstone ileus  
   e. bacterial cholangitis  
   f. choledocholithiasis  
   g. biliary dyskinesia  
   h. Sphincter of Oddi dysfunction  
iv. Differentiate among the various diagnostic modalities used to diagnose hepatobiliary disease (ultrasonography, CT scan, HIDA scan, MRCP)  
v. Describe treatment options for the above hepatobiliary disorders including laparoscopic or open cholecystectomy and ERCP  
vi. Describe the indications for selective cholangiography  
vii. Discuss the complications in dealing with these disorders, including:  
   a. bile duct injury  
   b. lost stones  
   c. postcholecystectomy pain  
   d. retained biliary stones  
   e. biliary leak  
viii. Describe the recognition and treatment of post cholecystectomy syndromes
ix. Discuss noncalculous biliary disease, its diagnosis and management

9. Colon Cancer

**Reading Assignment:** Sabiston Textbook of Surgery, pages 348-350, 1359-1381

**Online Case:** [Aquifer Wise-MD – Colon Cancer](#)

**Learning Objectives:**

i. Discuss colorectal cancer genetics and specific genetic mutations
   a. Describe what is meant by “mismatch repair genes”
   b. Discuss the adenoma-carcinoma sequence
   c. Discuss Lynch syndrome

ii. Describe colorectal polyps, their diagnosis and management

iii. Describe the epidemiology of colorectal cancer regarding prevalence in different parts of the colon, age at diagnosis, gender predilection (if any), frequency of hereditary versus sporadic.

iv. Discuss the importance of screening colonoscopy as a way to decrease colorectal cancer mortality

v. Describe the preoperative workup (staging) for a patient diagnosed with colorectal cancer

vi. Discuss the surgical management of colon cancer with respect to the location in the colon.

vii. Discuss the role of chemotherapy in colorectal cancer and the role of radiotherapy for colorectal cancer

viii. Describe the main postoperative complications for colon resections for colorectal carcinoma

ix. Describe the indications for temporary and permanent colostomy, including rectal cancer, Hartmann’s Procedure, large bowel obstruction (diverting colostomy)

10. Disease of the Breast

**Reading Assignment:** Sabiston Textbook of Surgery, pages 820-861

**Online Case:** [Aquifer Wise-MD – Breast Cancer](#)

**Learning Objectives:**

i. Recognize the anatomy of the breast and its lymphatic drainage

ii. Describe breast development and physiology, both normal and abnormal

iii. Describe the diagnosis of breast disease (breast cancer, fibro-adenoma, breast cysts, fibrocystic change, papilloma) and the use of radiographic-guided needle biopsy techniques for diagnosis

iv. Describe breast imaging (mammography, ultrasonography, MRI) and the limitations of each modality.

v. Identify and manage high-risk breast patients
   a. Describe the Gail model and how it is useful to primary care physicians.
   b. Describe the more common genetic aberrations that lead to an increase in risk for development of breast cancer

vi. Describe benign breast tumors and related diseases with attention to diagnosis and treatment
   a. Recognize breast pain vs. chest wall pain and the differential diagnosis and treatment
   b. Describe treatment options for cyclical breast pain
   c. Define pathologic nipple discharge and its work-up and treatment

vii. Describe staging systems (TNM) used in breast cancer and the more common pathologic types

viii. Discuss the surgical treatment issues in breast cancer
   a. Breast preservation vs. mastectomy
   b. Sentinel node biopsy
   c. Post-mastectomy reconstruction

ix. Describe the modern concept of breast cancer classification using molecular markers.

x. Discuss adjuvant chemoh- and radio- therapies

xi. Describe recognition and treatment of special conditions including:
   a. Disease in the elderly
   b. Chronic subareolar breast abscesses
   c. Paget’s disease
d. Breast cancer in men

11. Diverticulitis

Reading Assignment: Sabiston Textbook of Surgery, pages 1330-1334

Online Case: Aquifer Wise-MD – Diverticulitis

Learning Objectives:

i. Define diverticular disease
ii. Discuss the anatomy and pathogenesis of diverticular disease.
iii. Describe the Hinchey Classification used to assess severity of disease.
iv. Compare the diagnosis and treatment of uncomplicated and complicated diverticulitis.
v. Define a treatment algorithm based on pathology (perforated vs. nonperforated, abscess vs. no abscess etc.)
vi. Define the impact of patient condition, physical findings such as localized or generalized peritonitis, and CT findings on your treatment plan
vii. Identify the appropriate antibiotics for treatment of diverticulitis
viii. Identify which patients require interventional radiology for abscess drainage
ix. Define which patients require urgent surgical intervention
x. Define which patients require a colostomy
xi. Describe the surgical technique for primary anastomosis and Hartmann’s procedure
xii. Describe the management of patients with recurrent diverticulitis
xiii. Discuss the diagnosis and treatment of complications of diverticulitis including abscess, fistula, generalized peritonitis, pneumoperitoneum, bowel stricture/obstruction.

12. Inguinal Hernia

Reading Assignment: Sabiston Textbook of Surgery, pages 1092-1106

Online Case: Aquifer Wise-MD – Inguinal Hernia

Learning Objectives:

i. Describe the epidemiology of inguinal hernia (Age, gender, activities, etc.)
ii. Describe the anatomy of the inguinal region as it pertains to indirect, direct, and femoral hernias
iii. Define the key historical and physical findings in the diagnosis of an inguinal hernia.
iv. List the differential diagnosis for:
   a. groin masses
   b. scrotal masses
v. Define nonoperative management of an inguinal hernia
vi. Define the operative management of inguinal hernias.
vii. Define the diagnosis and management of a:
   a. sliding inguinal hernia.
   b. strangulated inguinal hernia.
   c. bilateral inguinal hernias.
viii. Define surgical site infection as a complication of inguinal hernia repair
ix. Define the nerve injuries that occur as a complication of inguinal hernia repair
x. Define injury to the spermatic cord, ischemic orchitis and testicular atrophy as a complication of inguinal hernia repair
xi. Define inguinal hernia recurrence as a complication of inguinal hernia repair
xii. List the pros and cons of open vs. laparoscopic repair of inguinal hernias including the rationale for using synthetic mesh for most inguinal hernia repairs.
13. Lung Cancer

**Reading Assignment:** Sabiston Textbook of Surgery, pages 1582-1592

**Online Case:** [Aquifer Wise-MD – Lung Cancer](#)

**Learning Objectives:**

i. Identify the epidemiology of lung cancer (prevalence, relation to gender and age, risk factors)
ii. Compare the difference between the predominant pathologic types (adenocarcinoma, squamous cell carcinoma, and small cell carcinoma)
iii. Define the role of helical CT screening in high risk individuals
iv. Define the role of surgery and surgical staging in the treatment of lung cancer

14. Pancreatic Disease

**Reading Assignment:** Sabiston Textbook of Surgery, pages 1524-1552

**Online Case:** [Aquifer Wise-MD – Pancreatitis](#)

**Learning Objectives:**

i. Define and classify pancreatitis
ii. Describe the risk factors associated with acute pancreatitis (AP)
iii. Define the pathophysiology of AP
iv. Define the clinical manifestations of AP
v. Define the diagnosis and differential diagnosis of AP
vi. Define the treatment for an episode of AP
vii. Define the role of ERCP in the treatment of AP
viii. Define the role of laparoscopic cholecystectomy in the treatment of acute pancreatitis
ix. Define the treatment of complications of pancreatitis including:
   a. Peripancreatic fluid collections
   b. Pancreatic necrosis
   c. Pancreatic pseudocysts
   d. Pancreatic ascites
   e. Pancreatocutaneous fistula
   f. Vascular complications
x. Define the assessment tools used for prognosis including Ranson’s Criteria for non-gallstone pancreatitis
xi. Define the pathology, etiology, diagnosis and treatment of chronic pancreatitis
xii. Define the management of chronic pain associated with pancreatitis
xiii. Define malignant pancreatic tumors, their diagnosis, treatment and prognosis

15. Pediatric Inguinal Hernia and Hydrocele

**Reading Assignment:** Sabiston Textbook of Surgery, page 1884

**Online Case:** [Aquifer Wise-MD – Pediatric Surgery: Hernia and Hydrocele](#)

**Learning Objectives:**

i. Define testicular descent and its relationship to pediatric inguinal hernias
ii. Define the approach to a groin mass in a child
iii. Identify the type of inguinal hernia that is most common in infants and children
iv. Define reducible and non-reducible hernia
v. Define the anatomy of an inguinal hernia including open vs obliterated processes vaginalis
vi. Define the anatomy of a hydrocele in a child.
 vii. Define communicating hydrocele
viii. Define non-communicating hydrocele
ix. Define the surgical approach to inguinal hernias in children
x. List the complications related to inguinal hernias in children
16. Principles of Preoperative, Operative, and Postoperative Surgery

Reading Assignment: Sabiston Textbook of Surgery, pages 202-231

Learning Objectives:

i. Describe pre-operative, peri-operative and post-operative periods.

ii. Describe the goal of a pre-operative evaluation.

iii. Describe the top patient risk factors most predictive of post-operative mortality.

iv. Describe the system used to categorize general risk using the American Society of Anesthesiologist (ASA) classification

v. Describe a systems approach to preoperative evaluation considering the following topics:
   a. Cardiovascular
      1. Revised Cardiac Risk Index using six predictors
      2. “Stepwise approach to preoperative cardiac assessment for non-cardiac surgery”.
      3. Timing of surgery after PTCA and MI
      4. Ability to climb stairs
   b. Pulmonary
      1. Indications for PFT’s
      2. Risk factors for post-op complications
   c. Renal
      1. Relationship to cardiac complications
      2. Timing of dialysis
   d. Hepatobiliary
      1. Child-Pugh classification
   e. Endocrine
      1. Insulin dosing
      2. Steroid dosing
   f. Immunologic
      1. Steroids, sirolimus
   g. Hematologic
      1. Guidelines for RBC transfusion
      2. Management of patients on chronic anticoagulation

vi. Define the considerations given to the following surgical issues:
   a. Age
   b. Risk factors for post-op delirium
   c. Nutritional status
   d. Obesity

vii. Identify indications for antibiotic prophylaxis based on the types of operative wounds listed by the National Research Council

viii. Identify the logic and evidence of pre-operative fasting.

ix. Recognize the usual presentation and treatment for the following causes of intra-operative instability:
   a. Myocardial infarction
   b. Pulmonary embolism
   c. Pneumothorax
   d. Malignant hyperthermia
   e. Anaphylaxis and latex allergy

x. Recognize Universal Protocol with respect to Wrong-Site Surgery
17. **Pyloric Stenosis**

**Reading Assignment:** Sabiston Textbook of Surgery, page 1869  
**Online Case:** [Aquifer Wise-MD – Pediatric Surgery: Pyloric Stenosis](#)  

**Learning Objectives:**

- i. Define the evaluation of the vomiting infant, specifically bilious vs non-bilious vomiting.  
- ii. Define the typical history of a patient with hypertrophic pyloric stenosis (HPS)  
- iii. Define the typical clinical presentation of a patient with HPS  
- iv. Define the typical physical findings in an infant with HPS  
- v. Define the important aspects of preoperative fluid and electrolyte management including the typical acid base abnormality  
- vi. Define the options for preoperative imaging studies for HPS  
- vii. Define the appropriate timing of surgical intervention  
- viii. Define the surgical treatment of HPS.  
- ix. List the possible complications of the surgical treatment of HPS and their management.

18. **Skin Cancer**

**Reading Assignment:** Sabiston Textbook of Surgery, pages 724-750  
**Online Case:** [Aquifer Wise-MD – Skin Cancer](#)  

**Learning Objectives:**

- i. Describe risk factors and treatment options for Basal Cell Carcinoma  
- ii. Describe risk factors and treatment options for Squamous Cell Carcinoma  
- iii. Define measures to prevent skin cancers  
- iv. Recognize the ABCDEs of melanoma  
- v. Recognize the risk factors for melanoma including pre-existing lesions and association with other cancers with gene mutations  
- vi. Describe Breslow’s thickness and recognize Clark’s levels and their relevance to prognosis, treatment and survival  
- vii. Describe the surgical treatment options for melanoma including width of surgical margins and indications for sentinel node biopsy  
- viii. Describe the indication for sentinel node biopsy and subsequent treatment in the biopsy is positive  
- ix. Recognize treatment alternatives for metastatic melanoma  
- x. Recognize the risk of developing skin cancer in transplant patients and the necessity for life-long surveillance  
- xi. Define Merkel Cell Carcinoma

19. **Surgical Treatment of Thyroid Disease**

**Reading Assignment:** Sabiston Textbook of Surgery, pages 881-920  
**Online Case:** [Aquifer Wise-MD – Thyroid Nodule](#)  

**Learning Objectives:**

- i. Discuss the epidemiology of thyroid nodules (changing prevalence, gender variance, predisposing conditions)  
- ii. Describe the typical symptoms of goiter and hyperthyroidism and the physical examination of the thyroid gland  
- iii. Describe the work-up of thyroid nodules (TSH, ultrasound, fine needle aspiration).  
- iv. Describe the indications (and alternative treatments) for surgical treatment of thyroid disease including: thyroid nodules, thyroid cancer, and hyperthyroidism  
- v. Describe the general conduct of thyroid surgery including the relevant anatomy and common complications, including recurrent laryngeal nerve injury and parathyroid gland injury  
- vi. Compare the four major types of thyroid cancer and differentiate them according to: prognosis, potential sites of metastases, need for post-operative treatment (radio-iodine, chemotherapy, etc.)
20. Trauma Resuscitation

Reading Assignment: Sabiston Textbook of Surgery, pages 413-417

Online Case: Aquifer Wise-MD – Trauma Resuscitation

Learning Objectives:

i. Describe the ABCDE of the primary survey

ii. Describe airway management including indications and means of definitive airway control including:
   a. Endotracheal intubation
   b. Cricothyroidotomy

iii. Recognize basic chest injuries and their treatment including
   a. Simple pneumothorax
   b. Tension pneumothorax
   c. Hemothorax
   d. Flail chest

iv. Define means to determine adequacy of circulation

v. Define means to control external bleeding

vi. Define means to gain emergent vascular access including intraosseous needle insertion and the Seldinger technique for central venous access

vii. Define means to determine neurologic deficits including the Glasgow Coma Score and AVPU

viii. Define the steps and importance of complete patient exposure including log rolling, identification of a spinal “step off”, digital rectal exam, and the prevention of hypothermia

ix. Define the secondary survey

x. Define the role of the trauma team leader

Osteopathic Manipulative Medicine and the Osteopathic approach to clinical cases are covered in the monthly workshops and tested on the OMM end-of-rotation exams. Students are responsible for reviewing the OMM Syllabus and meeting the learning objectives covered in each month’s workshop.