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# Cardiac Surgery 101

## Mini-Elective

### 2019

<u>Course Dates:</u>	January 8, 22, February 5, 19, 26 Tuesdays, 3:00-5:00 PM
<u>Maximum Students:</u>	20
<u>Class Year:</u>	MS1 and MS2
<u>Course Director:</u>	Ibrahim Sultan, MD, FACS Assistant Professor of Cardiothoracic Surgery Center for Thoracic Aortic Disease Center for Aortic Valve Disease UPMC Heart and Vascular Institute University of Pittsburgh Department of Cardiothoracic Surgery
<u>Contact Information:</u>	Ibrahim Sultan, MD, FACC 5200 Centre Ave, Suite 715 <sup>SEP</sup> Pittsburgh, PA 15232 Telephone: 412-623-2027 E-mail: <a href="mailto:sultani@upmc.edu">sultani@upmc.edu</a>
<u>Registration:</u>	Betsy Nero, Office of Medical Education <a href="mailto:betsy@medschool.pitt.edu">betsy@medschool.pitt.edu</a>

#### Description:

The aim of **Cardiac Surgery 101** is to provide University of Pittsburgh medical students a jump-start on their potential careers as future cardiac surgeons by providing an intensive five-week immersion into the field. The course foundation will be laid through interactive and case discussions for the first hour of each session. The second hour will allow students to apply their knowledge in surgical simulation labs. This elective will emphasize hands-on work utilizing porcine hearts, veins and tissue; as well as cardiovascular devices.

#### Course Objectives:

- Introduction to basic anatomy and physiology of the heart
- Understand how to diagnose cardiovascular pathology using clinical and imaging tools
- Develop basic understanding of surgical interventions for common cardiovascular pathologies
- Expose students to some of technical skills that are relevant to being a cardiac surgeon.
- Provide opportunities to engage in basic science and clinical research within the Department

#### Course Requirements:

Attend all five sessions, participate in an active and engaged manner. There are no prerequisites.

## **COURSE OUTLINE:**

### **Cardiac Surgery 101**

**January 8, 22, February 5, 19, 26**

**Tuesdays, 3:00-5:00 PM**

#### **Course Director:**

Ibrahim Sultan, MD, FACS  
Assistant Professor of Cardiothoracic Surgery  
Center for Thoracic Aortic Disease  
Center for Aortic Valve Disease  
UPMC Heart and Vascular Institute  
University of Pittsburgh  
Department of Cardiothoracic Surgery

#### **Course Location:**

Peter M. Winter Institute for Simulation Education and Research (WISER)  
230 McKee Place, #300  
Pittsburgh, PA 15213

### **SESSION I: January 8, 2019**

#### **Cardiopulmonary Bypass and ECMO**

Faculty: Ibrahim Sultan, MD, FACS

This first hour of this session will introduce you to basic anatomy and physiology of the heart. You will learn the concepts of cardiopulmonary bypass (CPB) and how open heart surgery is conducted with the assistance of CPB. You will also be introduced to Extra Corporeal Membrane Oxygenation (ECMO) and its role in critically ill patients. The second hour will involve hands on interaction with both a CPB and an ECMO simulator so you can see how it works in the operating room.

### **SESSION II: January 22, 2019**

#### **Coronary Artery Disease and CABG**

Faculty: Danny Chu, MD, FACS

The first hour will explore the leading cause of death in the United States, coronary artery disease (CAD) and surgical and non surgical interventions for CAD such as PCI and CABG. Didactic will be followed by a porcine heart lab, in which participants will be proctored through their first coronary artery bypass surgery (CABG).

### **SESSION III: February 5, 2019**

#### **Aortic Valve**

Faculty: Ibrahim Sultan, MD, FACS

The first hour will be spent on discussing natural history of patients with aortic stenosis and aortic regurgitation and the impact on the left ventricle. The lab will concentrate on understanding how an open aortic valve replacement is performed in most patients and how a transcatheter aortic valve replacement (TAVR) is performed in patients who are otherwise high risk for open heart surgery.

### **SESSION IV: February 19, 2019**

#### **Aorta**

Faculty: Ibrahim Sultan, MD, FACS

The first hour will be spent understanding how cardiac surgeons manage patients who present with elective and emergent aortic pathology using both open surgical and endovascular techniques. The second hour will allow students to practice sewing aortic grafts onto the porcine aorta and be able to deploy thoracic endografts (TEVAR).

### **SESSION V: February 26, 2019**

#### **Heart Transplant/LVAD**

Faculty: Arman Kilic, MD

Some patients simply have hearts that do not pump strongly enough to produce enough blood. The first hour will explore surgical management of heart failure with heart transplant or with left ventricular assist devices (LVAD). The lab will focus on live demonstration of various LVAD devices and their ability to replace the work of the ventricle.