

Unit Title	Course Name	Authors	Learning Objectives:
Immunobiology and Pharmacology	Immunosuppressive Medications in Abdominal Organ Transplantation	Oya Andacoglu, MD	<ol style="list-style-type: none"> <li>1. Understand the general classes/groups of agents and mechanism of action</li> <li>2. Appreciate the concern, possible mechanism and unintended side effects</li> <li>3. Identify CNI minimization and CNI free protocols as viable alternatives with focus updated data on benefits and risk compared to CNI based immunosuppression</li> </ol>
Immunobiology and Pharmacology	Basic Transplant Immunobiology: Basic Concepts	Allan Kirk, MD	<ol style="list-style-type: none"> <li>1. Describe Basic Immunology – adaptive or specific immunity</li> <li>2. Describe the relationship between antigen presenting cells and cytokines released by cells of the innate immune response</li> <li>3. Describe the types of antigen presenting cells and the changes that occur following exposure to antigen</li> <li>4. List the subsets of T cells and describe their function</li> <li>5. Describe the distribution of MHC Class I and Class II molecules on immune cells and commonly transplanted organs</li> <li>6. Describe the function of MHC Class I and Class II antigens</li> <li>7. Define the first, second, and third signals involved in the initiation of an effective antigen specific response</li> </ol>
Immunobiology and Pharmacology	Basic Transplant Immunobiology: Rejection	Allan Kirk, MD	<ol style="list-style-type: none"> <li>1. Definition of acute and chronic allograft rejection</li> <li>2. Cellular effector mechanisms of rejection</li> <li>3. Variables influencing alloreactivity</li> <li>4. Acellular effector mechanisms of rejection</li> <li>5. Variables influencing alloantibody reactivity</li> <li>6. Overview of complement activation</li> <li>7. Mediators of intracellular communication</li> <li>8. Co-stimulator molecules</li> </ol>
Immunobiology and Pharmacology	Major Histocompatibility Complex: Structure and Function of HLA: Part I	Adriana Zeevi, MD	<ol style="list-style-type: none"> <li>1. Describe the structural and functional differences between Class I and Class II MHC complexes</li> </ol>
Immunobiology and Pharmacology	Major Histocompatibility Complex: Clinical Significance of anti-HLA Antibodies: Part II	Adriana Zeevi, MD	<ol style="list-style-type: none"> <li>2. Describe the role of HLA antibody determination pre- and post- transplantation</li> <li>3. Describe the methodologies of HLA antibody detection</li> <li>4. Describe the sensitivity of HLA antibody detection and the role in decision making of individual transplant centers in determining acceptable</li> </ol>
Immunobiology and Pharmacology	Immunobiology of Transplantation	Sang-Mo Kang, MD	<ol style="list-style-type: none"> <li>1. Define basic transplant immunology terminology</li> <li>2. Describe how alloantigens are presented and recongnized by the host immune system</li> <li>3. Describe the host immune response to alloantigens</li> </ol>
Immunobiology and Pharmacology	Hyper-Acute Rejection: Part I	Robert Montgomery, MD, PhD	<p>Understand the:</p> <ol style="list-style-type: none"> <li>1. Clinical significance of hyperacute rejection</li> <li>2. Basic immunologic mechanisms of hyperacute rejection</li> <li>3. Therapies available for treatment and prevention of hyperacute rejection</li> <li>4. Implications for ABO incompatible and crossmatch positive transplants</li> </ol>
Immunobiology and Pharmacology	Hyper-Acute Rejection: Part II	Robert Montgomery, MD, PhD	N/A
Immunobiology and Pharmacology	Basic Mechanisms of Tolerance	Satish Nadig, MD, PhD	<ol style="list-style-type: none"> <li>1. What is tolerance?</li> <li>2. Types of tolerance</li> <li>3. Review central and peripheral tolerance</li> <li>4. Overview of T cell activation and cellular targets to achieve tolerance</li> <li>5. Review the possible Mechanisms to achieve tolerance</li> <li>6. Summary of strategies to achieve tolerance and future directions</li> </ol>
Immunobiology and Pharmacology	Pathological Analysis of Acute and Chronic Kidney Allograft Injury	Michael Mengel, MD	<ol style="list-style-type: none"> <li>1. To review the pathomechanisms of acute and chronic kidney allograft injury</li> <li>2. To understand the Banff classification system for diagnosing acute and chronic kidney allograft injury</li> <li>3. To highlight the limitations of the current Banff classification system</li> <li>4. To discuss future developments to increase diagnostics precision in acute and chronic kidney allograft injury</li> </ol>
Immunobiology and Pharmacology	Banff Schema for Diagnosis of Pancreas Allograft Rejection	Cinthia Drachenberg, MD	<ol style="list-style-type: none"> <li>1. Describe the normal histology of pancreas and histologic targets of acute T cell rejection</li> <li>2. Describe the stages of T cell rejection</li> <li>3. Describe the findings in chronic rejection</li> <li>4. Describe the histologic targets, diagnostic criteria and stages of antibody mediated rejection</li> </ol>
Organ Recovery	Medical and Surgical Issues of Brain Dead Donors	Thomas Diflo, MD, FACS	<ol style="list-style-type: none"> <li>1. To understand the steps of determining brain death</li> <li>2. To recognize and manage complications of brain death</li> <li>3. To describe organ donor evaluation and organ allocation</li> </ol>
Organ Recovery	Abdominal Organ Recovery from Deceased Donors	Jeffrey D. Punch, MD	<ol style="list-style-type: none"> <li>1. Be familiar with the pre-operative steps to deceased donor harvest</li> <li>2. Be familiar with the steps of the deceased donor operation</li> <li>3. Be familiar with the potential pitfalls of deceased donor operation</li> </ol>
Organ Recovery	Donation After Cardiac Death	David Al-Adra, MD	<ol style="list-style-type: none"> <li>1. Recognize donation after cardiac death (DCD) donors are a source of transplantable organs</li> <li>2. Appreciate the outcomes for DCD kidney and liver transplants are improving</li> <li>3. Understand the multiple potential mechanisms of graft failure after DCD liver transplantation</li> <li>4. Be aware of how donor-recipient matching may decrease biliary complications and improve graft survival</li> </ol>
Organ Recovery	Organ Preservation 101: Basic Principles	Zoe Stewart, MD	<ol style="list-style-type: none"> <li>1. Be familiar with the history of organ preservation</li> <li>2. Understand basic pathophysiology of ischemia and reperfusion</li> <li>3. Understand the differences of most common used solutions UW vs HTK</li> <li>4. Appreciate the advantages of pulsatile preservation over static cold storage</li> </ol>

Medical Complications of Tx	Pregnancy Outcomes After Transplantation	Lisa A. Coscia, RN, BSN, CCTC	<ol style="list-style-type: none"> <li>1. What is the TPRI</li> <li>2. Describe maternal conditions that can complicate pregnancies and their incidence in various organ transplant recipients.</li> <li>3. Describe newborn potential outcomes/complications and their incidence in various organ transplant recipients.</li> <li>4. Know the risks of immunosuppressive medications to the fetus.</li> <li>5. What are the AST consensus guidelines on the timing of planned pregnancies</li> </ol>
Medical Complications of Tx	Post Transplant Malignancy	Stuart M. Flechner, MD	N/A
Medical Complications of Tx	Skin Cancer in Organ Transplant Recipients: Challenges and Opportunities	Clark C. Otley, MD	<ol style="list-style-type: none"> <li>1. Recognize the appearance of the three most common types of skin cancer</li> <li>2. Understand the epidemiology and impact of immunosuppression on skin cancer incidence</li> <li>3. Be able to educate patients on risk factors, prevention, and treatments for skin cancers</li> <li>4. Understand the role of immunosuppression in the development of skin cancer (the section on the amount and varieties)</li> <li>5. Recognize the incidence of skin cancer is affected by the type of transplanted organ</li> <li>6. Understand the significance of actinic keratosis - that it requires aggressive treatment</li> </ol>
Medical Complications of Tx	Post-transplant Lymphoproliferative Disorders	Betsy C. Herold, MD	<ol style="list-style-type: none"> <li>1. Describe the epidemiology and pathophysiology</li> <li>2. Describe the diagnosis and treatment</li> <li>3. Describe the outcome of treatment in early PTL, polyclonal PTL and monoclonal PTL</li> </ol>
Medical Complications of Tx	Central Nervous System Infections: Part I- CNS Infection Syndromes	Valentina Stosor, MD	<ol style="list-style-type: none"> <li>1. Review the common infectious CNS syndromes in transplant recipients</li> <li>2. Outline the diagnostic approach when CNS infection is suspected</li> <li>3. Understand the differential diagnosis for infectious and non-infectious CNS disorders following transplantation</li> </ol>
Medical Complications of Tx	Central Nervous System Infections: Part II- Pathogens	Valentina Stosor, MD	<ol style="list-style-type: none"> <li>1. Review common pathogens encountered in posttransplant CNS infections</li> <li>2. Define the clinical presentation, diagnostic features, therapies, and prognosis of the common CNS infections</li> </ol>
Medical Complications of Tx	Donor-Transmitted Infections	Michael Ison, MD	<ol style="list-style-type: none"> <li>1. Identify the behavioral and medical risk factors that qualify a donor as "increased-risk of disease transmission."</li> <li>2. Describe the sensitivity of NAT testing for HIV, HBV, HCV and quantitate the risk of transmission of new infection in the setting "window-period" negative test results.</li> </ol>
Medical Complications of Tx	Donor Transmitted Diseases: Part II	Lewis Teperman, MD	<ol style="list-style-type: none"> <li>1. Describe results of using HBV core antibody-positive donors in HBV-immune and HBV-naïve recipients including protocols for use of HBIG and antiviral medications in the peri-operative and post-operative period.</li> <li>2. Identify emerging infections (influenza, West Nile virus, Zika, etc.) and risk of transmission via solid-organ transplant.</li> <li>3. Identify endemic infections that may be present in donors with exposures in and out of the US (Chagas, TB, strongyloides, Coccidiomyces, Histoplasma) and understand the role of screening of selected donors.</li> <li>4. Identify symptoms in recipients that should raise concern for transmission of donor-derived infectious diseases</li> </ol>
Medical Complications of Tx	Infections in Immunocompromised Hosts	Jeffrey Tessier, MD, FACP, FIDSA	<ol style="list-style-type: none"> <li>1. Identify typical opportunistic infections associated with transplantation</li> <li>2. Explain the time points post-transplantation certain types of opportunistic infections are usually observed</li> <li>3. State the management of immunosuppression for a transplant patient with an opportunistic infections</li> <li>4. Define the association between CMV infection, acute rejection, and long-term graft outcomes</li> </ol>
Medical Complications of Tx	BK Virus: Pathogenesis, Diagnosis, and Management	Mike Ison, MD	<ol style="list-style-type: none"> <li>1. Background: understand what is BK virus, prevalence, viral reactivation</li> <li>2. Appreciate the clinical significance of BK after kidney transplantation (prevalence, course, manifestations and effect on graft survival)</li> <li>3. Algorithm for surveillance, diagnosis and stages of BK infection and BK nephritis</li> <li>4. Treatment options</li> <li>5. Retransplantation in patients with graft loss due to BK nephropathy</li> </ol>
Medical Complications of Tx	Herpes Viruses after Solid Organ Transplantation	Eva A. Piessens, MD, MPH	<ol style="list-style-type: none"> <li>1. Understand the risk factors, prophylactic and treatment strategies, and post transplant manifestations of CMV reactivation and disease.</li> <li>2. Understand the risk factors, prophylactic and treatment strategies, and post transplant manifestations of EBV as it is associated with PTL.</li> <li>3. Understand the impact of the other Herpes viruses including HSV1 and 2, Varicella zoster virus, HHV-6, HHV-7, and HHV-9.</li> </ol>
Medical Complications of Tx	Prophylaxis and Treatment of Post-Transplant Hepatitis B	Daniel Kaul, MD	N/A
Medical Complications of Tx	Implication of Transplantation on Patient Finances and Insurance Coverage	Colleen Satarino, LMSW	<ol style="list-style-type: none"> <li>1. Review the psychosocial assessment as defined in the Center for Medicare and Medicaid Services (CMS) conditions of participation</li> <li>2. Consider the impact of social determinants of health regarding access to medical care and transplantation</li> <li>3. Review the financial aspects of transplant for the patient</li> <li>4. Discuss cases to describe the process for addressing the psychosocial and financial aspects of pre and post transplant care.</li> </ol>
Kidney Transplantation	Chronic Kidney Allograft Rejection	Jeremy Chapman, MD	<ol style="list-style-type: none"> <li>1. identify the causes, timeline and risk factors for chronic kidney allograft loss</li> <li>2. understand the methods and limitations for following kidney function</li> <li>3. potential strategies for detecting and mitigating chronic allograft loss</li> <li>4. understand the impact of pre txp DSA on graft outcome</li> </ol>
Kidney Tx	End Stage Renal Disease and the Renal Transplant Evaluation	Monica Grafals, MD	<ol style="list-style-type: none"> <li>1. Identify the most common disease that cause ESRD</li> <li>2. Know the rates of recurrence of these diseases in the transplanted kidney</li> <li>3. Understand the impact of renal transplantation in these diseases</li> <li>4. Evaluate patients for renal transplantation</li> </ol>

Kidney Transplantation	Obesity in Kidney Transplantation	Nicole Siparsky, MD	<ol style="list-style-type: none"> <li>1. Define obesity and the limits of BMI measurement on the kidney failure population</li> <li>2. Outline the impact of obesity on currently described outcome measurements of renal transplantation</li> <li>3. Describe medical and surgical complications associated with obesity and renal transplantation</li> <li>4. Describe medical and surgical approaches for the treatment of obesity in renal transplant recipients and candidates</li> </ol>
Kidney Transplantation	Pre-transplant Evaluation of the Kidney and/or Pancreas Recipient	David Lee, MD	To get an understanding of what the goals of a pre-transplant evaluation are as well as get an understanding of what is necessary for the UNOS documentation and further maintenance of transplant candidate
Kidney Transplantation	Expanded Criteria Donor: Kidney Transplantation	Patrick G. Dean, MD	<ol style="list-style-type: none"> <li>1. Define expanded criteria kidney donors</li> <li>2. Discuss methods to stratify kidney donors based upon predicted outcomes</li> </ol>
Kidney Transplantation	Evaluation of the Potential Living Kidney Donor	Elizabeth Thomas, DO	<ol style="list-style-type: none"> <li>1. Understand the benefits of living kidney donor transplantation</li> <li>2. Appreciate the risks of living kidney donor nephrectomy to the donor</li> <li>3. Appreciate the components and importance of the OPTN policy for living kidney donor evaluation</li> <li>4. Understand that there are dilemmas in living kidney donation and the acceptance criteria for living kidney donors continues to evolve</li> </ol>
Kidney Transplantation	Kidney Preparation for Transplantation	Alexandra P. Turner, MD	<ol style="list-style-type: none"> <li>1. Safe preparation of renal allograft for transplantation</li> <li>2. Anatomic pitfalls (procurement and patient related) and solutions</li> <li>3. Back table reconstruction techniques</li> <li>4. Placing kidney on machine pulsatile perfusion</li> </ol>
Kidney Transplantation	Kidney Transplantation: Surgical Complications	Sanjay Kulkarni, MD FACS	Provides a description of kidney transplant procedure and technical aspects that should be considered
Kidney Transplantation	Kidney Transplantation: Surgical Procedures	Sanjay Kulkarni, MD FACS	Discusses common complications associated with kidney transplantation
Kidney Transplantation	Delayed Graft Function DGF	Sameh Adel Fayek, MD, PhD	<ol style="list-style-type: none"> <li>1. Defining DGF</li> <li>2. Pathophysiology of DGF</li> <li>3. Diagnosis of DGF</li> <li>4. Implications of DGF</li> <li>5. Current and future approaches prevent and treat to DGF</li> </ol>
Kidney Transplantation	Transplant Nephrectomy	David Axelrod, MD	<ol style="list-style-type: none"> <li>1. Know the indications for early and delayed/late transplant nephrectomy</li> <li>2. Understand the risks and benefits of a transplant nephrectomy.</li> <li>3. Know the basic steps in performing a transplant nephrectomy.</li> </ol>
Kidney Transplantation	Current Status of Desensitization	Mark Stegall, MD	<ol style="list-style-type: none"> <li>1. Understand the definition of a sensitized patient</li> <li>2. Understand the need for desensitization in the current era</li> <li>3. Understand the current clinical trials for desensitization</li> </ol>
Kidney Transplantation	Evaluation of Post-Transplant Renal Dysfunction	John J. Friedewald, MD	<ol style="list-style-type: none"> <li>1. Define acute kidney injury and a generalized approach to its evaluation</li> <li>2. Understand prerenal causes of renal dysfunction</li> <li>3. Understand intrinsic causes of renal dysfunction</li> <li>4. Understand postrenal causes of renal dysfunction</li> </ol>
Kidney Transplantation	Kidney Transplant Outcomes	Randall S. Sung, MD	<ol style="list-style-type: none"> <li>1. To understand outcome differences between living donors and subtypes of deceased donors</li> <li>2. Understand risk and benefits of transplanting kidneys from high KDPI donors</li> <li>3. Understand impact of recipient factors on outcomes</li> <li>4. Understand impact of donor factors on outcomes</li> <li>5. Understand risk and benefits of high KDPI kidneys</li> </ol>
Kidney Transplantation	Long Term Kidney Transplant Outcomes and Chronic Graft Loss	Min Yoo, MD	<ol style="list-style-type: none"> <li>1. To appreciate approximate long-term kidney graft survival length of time.</li> <li>2. To know the common causes of long-term graft failure.</li> <li>3. To recognized common histologic features of chronic graft failure.</li> <li>4. To recognize the predictors of long-term graft survival.</li> </ol>
Kidney Transplantation	Diagnosis of Rejection and Treatment of ACR and AMR in Kidney Transplant Patients	John J. Friedewald, MD	<ol style="list-style-type: none"> <li>1. Understand the differences between types and timing of rejection</li> <li>2. Be able to describe the mechanism of action of different therapies used to treat rejection</li> <li>3. Become familiar with novel biomarkers for the diagnosis of acute rejection</li> </ol>
Liver Transplantation	Liver Transplantation: The Pre-Evaluation	Jonathan Fryer, MD	<ol style="list-style-type: none"> <li>1. Describe the changes to cardiac physiology resulting from cirrhosis</li> <li>2. Understand the types of cardiac disease in liver transplant candidates</li> <li>3. Describe the evaluation algorithm for each type of cardiac disease</li> </ol>
Liver Transplantation	Donor Options for Pediatric Liver Transplantation: Evaluation and Management: Part I	Kim M. Olthoff, MD	N/A
Liver Transplantation	Donor Options for Pediatric Liver Transplantation: Evaluation and Management: Part II	Kim M. Olthoff, MD	N/A
Liver Transplantation	OPTN / UNOS Liver Allocation System	Richard B. Freeman, MD	<ol style="list-style-type: none"> <li>1. Describe the goals and rationale for liver allocation</li> <li>2. Understand how MELD/PELD is calculated</li> <li>3. Know the criteria for adult and pediatric Status 1A (1B) listing</li> <li>4. Describe the current HCC MELD exception policy and understand the reasoning for its implementation</li> <li>5. Be familiar with the currently available MELD exceptions (CF, FAP, HPS, PLD, NET etc.)</li> </ol>

Liver Transplantation	Liver Implantation Techniques	Sunil K. Geevarghese, MD, FACS	<ol style="list-style-type: none"> <li>1. Enhance recognition of aberrant hepatic arteries during procurement and understanding of various arterial reconstruction options</li> <li>2. Review the pitfalls of procuring arterial and venous conduit</li> <li>3. Describe the differences in the recipient hepatectomy for bicaval and piggyback orthotopic liver transplants</li> <li>4. Understand indications for and steps of placing a patient on venovenous bypass</li> <li>5. Manage intraoperative challenges with reperfusion including hemorrhage</li> <li>6. Recognize the difficult hepatic artery anastomosis and means to handle it</li> <li>7. Navigate donor-recipient bile duct size mismatch</li> </ol>
Liver Transplantation	Alcohol Liver Disease and Liver Transplantation	Cary Caldwell, MD	<ol style="list-style-type: none"> <li>1. Describe the incidence, mechanisms and manifestations of Alcoholic Liver Disease</li> <li>2. Describe the selection process for ESLD patients with ALD</li> <li>3. Describe the stratagems of Transplant Centers in dealing with ALD patients</li> <li>4. Describe the results of OLT in ALD patients</li> </ol>
Liver Transplantation	Management of Complications of End Stage Liver Disease (ESLD)	Kawtar Al Khalloufi, MD	<ol style="list-style-type: none"> <li>1. To understand the differences between compensated and decompensated liver disease</li> <li>2. To discuss the CPT versus MELD scoring systems as a classification of degree of liver disease</li> <li>3. To describe the pathophysiology, diagnosis, and management of major complications of ESLD including ascites, spontaneous bacterial peritonitis, hepatorenal syndrome, hepatic encephalopathy, and variceal hemorrhage.</li> </ol>
Liver Transplantation	Acute Liver Failure	Sameh Adel Fayek, MD, PhD	<ol style="list-style-type: none"> <li>1. Define acute on top of chronic liver failure (ACLF)</li> <li>2. Impact of ACLF/scoring systems (CLIF-SOFA scoring); Survival / mortality risk in ACLF; Prevalence of ACLF among inhouse liver patients with cirrhosis; Financial burden of ACLF</li> <li>3. Pathophysiology and clinical presentation of ACLF; Predisposing factors: (acute liver injury on top of chronic, extrahepatic process “bleed – infection”, un identified); Predisposition: (Genetic, Gut/ microbiota, infection; Pathophysiology (SIRS, infection, MOF)</li> <li>4. Management; Medial management – role of liver support systems; Prognostic criteria for survival; To transplant or not ---Futile Transplant; Role of LDLT</li> </ol>
Liver Transplantation	PSC and PBC	Gregory Gores, MD	N/A
Liver Transplantation	Non-alcoholic Steatohepatitis: NASH	Marc L. Melcher, MD, PhD	N/A
Liver Transplantation	Budd-Chiari Syndrome	Jonathan Fryer, MD	<ol style="list-style-type: none"> <li>1. Define and review the potential causes of Budd-Chiari Syndrome</li> <li>2. Understand the diagnostic pathway for Budd-Chiari Syndrome</li> <li>3. Discuss the management of Budd-Chiari Syndrome</li> </ol>
Liver Transplantation	Hepatocellular Carcinoma: Epidemiology and Diagnosis	David A. Axelrod, MD	<ol style="list-style-type: none"> <li>1. Understand the evolving epidemiology of HCC in the US</li> <li>2. Understand which populations should be screened for HCC and which studies should be used</li> <li>3. Understand diagnostic criteria for HCC</li> </ol>
Liver Transplantation	Hepatocellular Carcinoma: Treatment Options	David A. Axelrod, MD	<ol style="list-style-type: none"> <li>1. Describe minimally invasive treatment options (RFA, TACE, stereotactic radiation, Y90) and indications for their use</li> <li>2. Describe patients who may be candidates for resection of HCC based on anatomy and underlying liver reserve</li> <li>3. Describe the Milan and UCSF criteria used for transplant candidacy and the role of downstaging</li> <li>4. Describe the MELD exception process for transplant candidates with HCC</li> <li>5. Discuss adjuvant therapies for HCC</li> </ol>
Liver Transplantation	Acute Rejection of the Liver Allograft: Clinical, Laboratory and Histologic Presentation	Urmila Khettry, MD	N/A
Liver Transplantation	Pulmonary Contraindications To Liver Transplant	M. Susan Mandell, MD, PhD	<ol style="list-style-type: none"> <li>1. To know which diseases lead to both liver and lung disease</li> <li>2. To understand that lung disease can affect the lung tissue, pleura and/or pulmonary vascular system</li> <li>3. To learn about the natural history of each lung disease</li> <li>4. To know how functional reserve is measured for each type of lung disease</li> <li>5. To recognize when lung disease is a contraindication to liver transplantation</li> </ol>
Liver Transplantation	Long Term Management of the Liver Transplant Recipient	Justin Boike, MD, MPH	<ol style="list-style-type: none"> <li>1. Trends and Disease Recurrence in Liver Transplant Recipients</li> <li>2. Malignancy Risk and Mitigation after Transplant</li> <li>3. Renal Disease after Liver Transplant</li> <li>4. Metabolic Complications Associated with Transplant</li> <li>5. Routine Health Maintenance</li> </ol>
Liver Transplantation	Liver Offers: Factors Influencing Your Decision	Elizabeth Pomfret, MD, PhD and Megan Adams, MD	<ol style="list-style-type: none"> <li>1. How should consent be approached with regard to liver transplantation and organs with special considerations?</li> <li>2. Understand donor specific concerns with regard to management and outcomes</li> <li>3. Understand what resources are available to assist with organ evaluation and decision making</li> </ol>
Liver Transplantation	Adult Recipient Outcomes after Live Donor Liver Transplantation	John Roberts, MD	<ol style="list-style-type: none"> <li>1. Appreciate the overall benefit of live donor liver transplantation (LDLT) as compared to deceased donor transplantation and waiting list risk</li> <li>2. Understand factors associated with improved LDLT outcomes</li> <li>3. Profile of complications is LDLT setting versus deceased donor liver transplants</li> <li>4. Unique complications and concerns with living donor liver transplantation: Small for size, HCV, HCC</li> <li>5. Financial implications of LDLT</li> </ol>
Liver Transplantation	Adult Living Donor Liver Transplantation: Donor Outcomes	Ravi Mohanka MD, MS, DNB, MSc, MBA and Amay Banker MBBS, MS	<ol style="list-style-type: none"> <li>1. Learn living liver donor outcomes: mortality, morbidity and quality of life</li> <li>2. Understand the factors and strategies to reduce risks with living liver donation and outcomes in specific circumstances</li> </ol>
Liver Transplantation	DCD Liver Transplant Outcomes	Christopher B. Hughes, MD	<ol style="list-style-type: none"> <li>1. To review the history and laws related to DCD transplantation</li> <li>2. To describe the proposed mechanisms and risk factors for ischemic cholangiopathy</li> <li>3. To describe the spectrum of potential manifestation of ischemic cholangiopathy</li> <li>4. To discuss possible donor and recipient techniques to reduce the risk of ischemic cholangiopathy</li> </ol>

Liver Transplantation	Living Donor Allograft Reconstruction	Koji Hashimoto, MD	<ol style="list-style-type: none"> <li>1. To understand indications for back table reconstruction in each type of living donor grafts.</li> <li>2. To review surgical techniques of back table reconstruction.</li> <li>3. To understand the beneficial effects of back table reconstruction.</li> </ol>
Liver Transplantation	Living Donor Liver Transplant: The Operation and Outcomes	Koji Hashimoto, MD	<ol style="list-style-type: none"> <li>1. Understand the concept of functional graft size in liver transplantation using a partial graft</li> <li>2. Understand the importance of graft inflow and outflow in LDLT</li> <li>3. Review surgical techniques of recipient operation (left lobe vs. right lobe)</li> <li>4. Understand the short- and long-term outcomes after adult LDLT.</li> </ol>
Liver Transplantation	Evaluation and Selection of the Living Liver Donor	Lawrence Lau, MBBS, PhD	<ol style="list-style-type: none"> <li>1. Understand the principles guiding the assessment of living liver donation</li> <li>2. Understand the aims of donor evaluation</li> <li>3. Understand the assessment process including initial screening, diagnostic tests and consultations with various team members</li> <li>4. Understand the selection and exclusion criteria of candidates for living liver donation</li> </ol>
Pancreas Transplantation	Pancreas Transplant Evaluation	Daniel A. Katz, MD	<ol style="list-style-type: none"> <li>1. Understand indications and contraindications for pancreas transplant</li> <li>2. Understand how to think about candidate selection in the context of potential risks and benefits</li> <li>3. Consider the key parts of the surgical portion of the evaluation for pancreas transplant</li> </ol>
Pancreas Transplantation	Surgical Technique of Pancreas Recovery	Clark D. Kensinger, MD	<ol style="list-style-type: none"> <li>1. Pre-procurement communication</li> <li>2. Steps of the donor pancreatectomy</li> <li>3. Navigating a replaced right hepatic artery during pancreas procurement</li> <li>4. Assessing and communicating quality</li> <li>5. Avoiding procurement errors</li> <li>6. Pediatric and DCD pancreas procurement</li> </ol>
Pancreas Transplantation	Pancreas Back Table Preparation	Clark D. Kensinger, MD	<ol style="list-style-type: none"> <li>1. Back table set up and equipment</li> <li>2. Steps of a pancreas back table</li> <li>3. Navigating challenging donor arterial anatomy</li> </ol>
Pancreas Transplantation	Pancreas Transplantation: Exocrine and Venous Drainage	Jonathan A. Fridell, MD	<ol style="list-style-type: none"> <li>1. Describe the history and evolution of pancreas transplant drainage techniques.</li> <li>2. Describe advantages, disadvantages, and techniques of pancreas transplant bladder drainage.</li> <li>3. Describe advantages, disadvantages, and techniques of pancreas transplant enteric drainage.</li> </ol>
Pancreas Transplantation	Impact of Pancreas Transplantation on Quality of Life	Seth J. Karp, MD	<ol style="list-style-type: none"> <li>1. Examine the effect of a successful pancreas transplant of each of these complications</li> <li>2. Examine the consequences of a failed pancreas transplant.</li> </ol>
Pancreas Transplantation	Pancreas Transplantation: The Outcomes and Survival Benefits- Part I	Mark L. Sturdevant, M.D.	<ol style="list-style-type: none"> <li>1. Describe the Graft and Patient Outcomes of SPK, PTA, and PAK</li> <li>2. Describe the factors associated with Early Graft Failure</li> <li>3. Describe the strategies to improve Pancreas transplant</li> </ol>
Pancreas Transplantation	Pancreas Transplantation: The Outcomes and Survival Benefits- Part II	Mark L. Sturdevant, M.D.	<ol style="list-style-type: none"> <li>1. Describe the level of evidence on the long-term benefits of Pancreas Transplant</li> <li>2. Discuss in detail the specific effects on retinopathy, neuropathy and macrovascular</li> <li>3. Describe alternative treatments for Type 1 DM and selective type 2 DM</li> </ol>
Pancreas Transplantation	Surgical Complications of Pancreas Transplantation: Part I	Christoph Troppman, MD	<ol style="list-style-type: none"> <li>1. To define common surgical complications and technical failure of pancreas transplant</li> <li>2. To describe the diagnosis and management of vascular thrombosis following pancreas transplant</li> <li>3. To identify risk factors for pancreas graft thrombosis</li> <li>4. To describe common protocols to prevent pancreas graft thrombosis</li> <li>5. To describe late vascular complications of pancreas transplantation</li> </ol>
Pancreas Transplantation	Surgical Complications of Pancreas Transplantation: Part II	Christoph Troppman, MD	<ol style="list-style-type: none"> <li>1. To describe risk factors for and diagnosis and management of deep surgical site infections</li> <li>2. To explore reasons for the differential morbidity &amp; mortality of leaks between enteric drained vs bladder drained grafts</li> <li>3. To describe diagnosis and management of pancreatic leaks</li> <li>4. To identify causes of graft pancreatitis and describe evaluation to determine etiology and management</li> <li>5. To discuss management of pancreatic pseudocysts and fistulas</li> </ol>
Pancreas Transplantation	Surgical Complications of Pancreas Transplantation: Part III	Christoph Troppman, MD	<ol style="list-style-type: none"> <li>1. Describe the etiologies of and diagnostic algorithms for early and late post-transplant bleeding</li> <li>2. Describe the management of early and late bleeding complications</li> <li>3. Review the common pancreas procurement vascular injuries</li> <li>4. Understand the injuries that can occur to the recipient aortoiliac tree during pancreas implantation and the management of them</li> <li>5. Describe metabolic, urologic and graft-related complications frequently seen in bladder-drained pancreas allografts</li> </ol>
Pancreas Transplantation	Indications and Technique for Graft Pancreatectomy and Pancreas Retransplantation	Ty B. Dunn, MD	<ol style="list-style-type: none"> <li>1. Indication and timing of graft pancreatectomy</li> <li>2. Indications and outcomes of pancreas re-transplants</li> <li>3. Technical tips for re-transplantation of the pancreas</li> <li>4. Be familiar with the technical challenges and principles of graft pancreatectomy</li> </ol>
Pancreas Transplantation	Triaging the Type I Diabetic Patient for Beta Cell Replacement: Solid Organ Pancreas vs. Islets Based on Current Outcomes	Peter Stock, MD, PhD	<ol style="list-style-type: none"> <li>1. To have an understanding of solid organ pancreas transplant outcomes vs islet cell transplant outcomes.</li> <li>2. To be able to list patient indications for islet transplant versus pancreas transplant</li> <li>3. To be able to discuss benefits and risks of islet transplant.</li> <li>4. To describe deceased donors that may be ideal for islet transplantation rather than pancreas transplant.</li> <li>5. Technical complications of islet cell transplantation</li> <li>6. Understanding basic concept of islet isolation</li> </ol>
Dialysis Access	Vascular Access for Hemodialysis: An Update: Part I	Joseph R. Leventhal, MD, PhD	<ol style="list-style-type: none"> <li>1. Understand the goals of dialysis access</li> <li>2. Understand the advantages and disadvantages of various types of access</li> <li>3. Appreciate the advantages and disadvantages of various types of access for a patient depending on their co-morbidities</li> <li>4. Understand the challenges in providing patients with optimal access</li> <li>5. Be familiar with the DOCI guidelines for dialysis access</li> </ol>

Dialysis Access	Vascular Access for Hemodialysis: An Update: Part II	Joseph R. Leventhal, MD, PhD	<ol style="list-style-type: none"> <li>1. Understand the considerations and objectives when deciding on type of dialysis access</li> <li>2. Understand the advantages and disadvantages of various sites and types of dialysis access</li> <li>3. Understand the general medical considerations:</li> <li>4. Be familiar with operative site evaluation:</li> <li>5. Be familiar with potential anesthetic approaches</li> </ol>
Dialysis Access	Complications of Vascular Access	Kenneth J. Woodside, MD	<ol style="list-style-type: none"> <li>1. To describe the diagnosis, evaluation, and management of common vascular access complications</li> <li>2. To describe the approach and importance of vascular access site conservation and salvage</li> <li>3. To describe and emphasize the multidisciplinary nature of vascular access use and management</li> </ol>
Dialysis Access	Peritoneal Dialysis Catheters	James Whiting, MD	<ol style="list-style-type: none"> <li>1. Name the 3 components of the peritoneal membrane and outline the pore theory of transperitoneal transport</li> <li>2. Compare and contrast the approaches for peritoneal catheter placement</li> <li>3. List the common complications of peritoneal catheter placement and approaches for their treatment</li> </ol>
Public Policy and Organ Allocation	Organ Procurement and Transplant Network (OPTN) and the Transplant Center	Timothy L. Pruett, MD	<ol style="list-style-type: none"> <li>1. Understand the history of the development of the OPTN.</li> <li>2. Describe the major provisions of NOTA.</li> <li>3. Describe the major provisions of the Final Rule.</li> <li>4. Understand the role of MPSC, UNOS, and CMS and how they interact in the regulation of transplant center oversight</li> </ol>
Public Policy and Organ Allocation	Scientific Registry of Transplant Recipients	Bertram L. Kasiske, MD	<ol style="list-style-type: none"> <li>1. Understand the organizational structure of OPTN and SRTR .</li> <li>2. Understand the services provided by the SRTR and its role in feedback to the transplant center and policy development.</li> <li>3. Understand the methods by which the OPTN uses Program Specific Reports (PSRs) in transplant center oversight</li> </ol>
Public Policy and Organ Allocation	Centers for Medicare Services (CMS) for Accreditation of Hospitals & Oversight of Transplantation	Kenneth Andreoni, MD	<ol style="list-style-type: none"> <li>1. Addresses the oversight role of the Centers for Medicaid and Medicare Services (CMS) and the Joint Commission (JC) in transplantation (current objective)</li> <li>2. Outlines the infrastructure of Medicare services and how it applies to transplantation.</li> <li>3. Outlines the Medicare requirements for conditions of participation by the transplant centers.</li> <li>4. Addresses the transplant services covered by Medicare</li> <li>5. MACRA</li> </ol>
Ethics	Ethics	Eric Grossman, MD and Peter Angelos, MD, PhD	<ol style="list-style-type: none"> <li>1. Understand terminology of medical ethics and origins in Western philosophy</li> <li>2. Describe the historical context of ethical principles in medicine</li> <li>3. Apply the ethical principles to the practice of transplantation</li> </ol>
Ethics	Ethics Surrounding DBD and DCDD Donors	David P. Foley, MD	<p>Overall: Recognize and understand the ethical principles surrounding DBD and DCDD</p> <ol style="list-style-type: none"> <li>1. Uniform Determination of Death Act</li> <li>2. Criteria for Brain Death</li> <li>3. Controlled DCDD Protocols</li> <li>4. Utilization of donor hearts after DCDD</li> <li>5. Uncontrolled DCDD protocols</li> </ol>
Ethics	Ethics in Living Liver Donation	Anji Wall, MD, PhD	<ol style="list-style-type: none"> <li>1. Understand donor autonomy and its establishment through informed consent</li> <li>2. Explain beneficence and non-maleficence as it applies to living liver donation</li> <li>3. Understand all the required aspects of informed consent. (reference guidelines)</li> <li>4. Understand the ethical challenges with living donation as it relates to the recipient's condition (e.g pediatric recipient, alcoholic liver disease, HCC)</li> </ol>
Hepato-Pancreatico-Biliary	Management of Benign Tumors of the Liver	Kelly M. Collins, MD	<ol style="list-style-type: none"> <li>1. Diagnostic evaluation of liver masses, including incidental and symptomatic masses, and in cirrhotic patients.</li> <li>2. Diagnostic evaluation of cystic liver lesions.</li> <li>3. Surgical therapy for benign liver tumors.</li> <li>4. Liver transplantation for benign liver tumors.</li> </ol>
Hepato-Pancreatico-Biliary	Metastatic Cancer of the Liver	Parsia A. Vagefi, MD	<ol style="list-style-type: none"> <li>1. Diagnostic evaluation, staging, and multidisciplinary management of metastatic cancer to the liver.</li> <li>2. Surgical therapy of metastatic colorectal cancer to the liver.</li> <li>3. Neoadjuvant, adjuvant, and liver-directed therapies for metastatic colorectal cancer to the liver.</li> <li>4. Liver Transplantation for metastatic disease (NE tumor, colorectal cancer).</li> </ol>
Hepato-Pancreatico-Biliary	Management of Cholangiocarcinoma	Shimul A. Shah, MD, MHCM	<ol style="list-style-type: none"> <li>1. Diagnostic evaluation and treatment selection, for intrahepatic and extrahepatic cholangiocarcinoma</li> <li>2. Surgical therapy for intrahepatic cholangiocarcinoma (IHCC), including resection and liver transplantation.</li> <li>3. Surgical therapy for extrahepatic cholangiocarcinoma, including resection and transplantation.</li> <li>4. Neoadjuvant, adjuvant, and liver-directed therapies for cholangiocarcinoma</li> </ol>
Hepato-Pancreatico-Biliary	Pediatric Liver Tumors: Hepatoblastoma	Sophoclis P. Alexopoulos, MD, FACS	<ol style="list-style-type: none"> <li>1. Understand the risk factors associated with hepatoblastoma</li> <li>2. Be able to describe the PRETEXT staging system for hepatoblastoma</li> <li>3. Understand the use of neoadjuvant chemotherapy in the treatment of hepatoblastoma</li> <li>4. Understand the role of surgical resection in hepatoblastoma</li> <li>5. Know the indications for liver transplantation in hepatoblastoma</li> </ol>
Hepato-Pancreatico-Biliary	Pancreatitis Management	Marlon F. Levy, MD, FACS	<ol style="list-style-type: none"> <li>1. Management of acute pancreatitis, including pancreatic necrosis.</li> <li>2. Management of chronic pancreatitis, including resection and drainage procedures.</li> <li>3. Role of total pancreatectomy and auto-islet transplantation.</li> </ol>
Hepato-Pancreatico-Biliary	Management of Gallbladder Cancer	Karim J. Halazun, MD, FACS	<ol style="list-style-type: none"> <li>1. Evaluation and management of the gallbladder mass/polyp</li> <li>2. Management of incidental gallbladder carcinoma s/p simple cholecystectomy</li> <li>3. Surgical therapy of gallbladder carcinoma (radical cholecystectomy)</li> <li>4. Adjuvant and liver-directed therapies for gallbladder carcinoma</li> </ol>
Hepato-Pancreatico-Biliary	Choledochal Cyst Management	Kendra D. Conzen, MD, FACS	<ol style="list-style-type: none"> <li>1. Evaluation and staging of choledochal cysts</li> <li>2. Workup and surgical management of choledochal cysts</li> <li>3. Consideration of liver transplantation in patients with choledochal cyst</li> </ol>

Hepato-Pancreatico-Biliary	Management of Benign Cystic Tumors of the Pancreas	Adeel S. Khan, MD, MPH	<ol style="list-style-type: none"> <li>1. Review the differential diagnosis of benign (cystic) pancreatic neoplasms</li> <li>2. Discuss clinical presentation and diagnosis of benign pancreatic neoplasms including radiographic features and role of endoscopic ultrasound/fluid analysis</li> <li>3. Overview of management</li> <li>4. Surveillance in operative and non-operative patients.</li> </ol>
Hepato-Pancreatico-Biliary	Management of Cirrhosis in Non-Transplant Conditions	Gregory Veillette, MD, FACS	<ol style="list-style-type: none"> <li>1. Physiology of cirrhosis and portal HTN</li> <li>2. Implications for non-transplant procedures</li> <li>3. Predicting outcome/prognosis</li> <li>4. Non-hepatic surgical procedures in the cirrhotic patient</li> <li>5. Liver resection in the cirrhotic patient</li> <li>6. Role of TIPS as adjunct</li> </ol>
Hepato-Pancreatico-Biliary	Resection for HCC	M.B. Majella Doyle, MD, FACS	<ol style="list-style-type: none"> <li>1. To describe the diagnostic evaluation for HCC</li> <li>2. To describe liver-directed therapy use, including bridging &amp; downstaging</li> <li>3. To discuss the considerations for deciding between liver transplant and surgical resection for patients with HCC</li> </ol>
Hepato-Pancreatico-Biliary	Management of HCC with Liver Transplant	M.B. Majella Doyle, MD, FACS	<ol style="list-style-type: none"> <li>1. To describe the Milan and UCSF criteria as they relate to liver allocation policy</li> <li>2. To describe the role of loco-regional therapies in down-staging and assessing suitability for transplant</li> <li>3. To discuss the potential option of living donor liver transplant for patients with HCC</li> </ol>
Hepato-Pancreatico-Biliary	Benign Bile Duct Injury and Strictures	Christopher J. Sonnenday, MD, MHS	<ol style="list-style-type: none"> <li>1. To develop a systemic approach to the evaluation and initial management of a patient with a suspected bile duct injury</li> <li>2. To understand the appropriate diagnostic evaluation of patients with bile duct strictures</li> <li>3. To understand biliary reconstruction options for patients with bile duct injuries and strictures</li> </ol>
Intestinal Transplantation	Intestinal Transplantation: Evaluating a Potential Candidate	Shaheed Merani, MD, PhD, FRCSC, FACS	<ol style="list-style-type: none"> <li>1. Deciding on when to list a patient for intestinal transplant</li> <li>2. Classical indications for listing for intestinal transplant</li> <li>3. How listing patients for intestinal transplant has changed with time</li> <li>4. Outline of additional workup required</li> </ol>
Pediatrics	Health Care Transition Following Pediatric Solid Organ Transplantation and Maintaining Adherence	Jennifer Vittorio, MD	<ol style="list-style-type: none"> <li>1. Define health care transition.</li> <li>2. Review current outcomes following transfer of care for pediatric solid organ transplant recipients.</li> <li>3. Identify and discuss barriers to health care transition.</li> <li>4. Review the "Six Core Elements of Transition."</li> </ol>
Pediatrics	Immunosuppression, Rejection, and Tolerance in Pediatric Transplantation	Walter S. Andrews, MD	<ol style="list-style-type: none"> <li>1. Understand the current usage of immunosuppression in Pediatric liver and kidney transplantation.</li> <li>2. Understand what makes immunosuppression management different in children as compared to adults.</li> <li>3. Understand the approaches to diagnosing and treating acute and chronic rejection.</li> <li>4. Current understanding and status of Tolerance in Pediatric transplantation.</li> </ol>
Pediatrics	Pediatric Organ Allocation: Listing, applying for exception points	Srinath Chinnakotla, MBBS, MCh, FACS	<ol style="list-style-type: none"> <li>1. Understand the PELD score and Pediatric allocation system</li> <li>2. Understand candidate who could receive exception points</li> <li>3. How to write an exception narrative</li> </ol>
Diversity, Equity, Inclusion, and Anti-Racism Unit	Disparities in Donation: Issues and Solutions	Malay B. Shah, MD	N/A
Diversity, Equity, Inclusion, and Anti-Racism Unit	Taking Care of Diverse Patient Populations	Tanjala S. Purnell, PhD, MPH	N/A
Diversity, Equity, Inclusion, and Anti-Racism Unit	Building an African American Transplant Access Program: My Experience	Dinee C. Simpson, MD	N/A
Diversity, Equity, Inclusion, and Anti-Racism Unit	Advancing Equity in Transplantation: What is the fellow's role?	Lee S. Cummings, MD	N/A
Diversity, Equity, Inclusion, and Anti-Racism Unit	Viable Diversity: Homogenous Goals + Variant Backgrounds = Improved Outcomes	Thomas Butler, MD, MS, FACS	N/A