I. Getting and Maintaining the View
   A. Instructing and counseling the patient
      1. Educate patient
      2. Patient positioning
   B. Slit-lamp set-up
   C. Choosing lens
      1. Goldmann three-mirror lens
         a) Fundus lens
         b) Thumbnail (59 deg) for viewing angle and ora serrata
         c) Rectangular (67 deg) for viewing equator to ora
         d) Trapezoid (73 deg) for viewing post pole to equator
      2. Four-mirror lenses
         a) With and without handles
         b) No coupling solution required
         c) Four quadrants visible, 11 deg rotation to complete view
         d) Indentation gonioscopy
      3. One-mirror, two-mirror and laser lenses
         a) Concentrate laser energy
         b) Convex buttons to increase mag
         c) Broader viewing area
   D. Preparing lens and choosing cushioning agent
      1. Cleaning, disinfecting or sterilizing
      2. Coupling Solution
         a) Methylcellulose
         b) Carboxymethylcellulose
   E. Insertion technique
      1. Check corneal integrity
      2. Hold with thumb and forefinger
      3. Mirror positioning
      4. Pull lower lid down with patient in up-gaze
         a) Rest lens on lower lid margin
         b) Tilt lens onto cornea as patient looks straight ahead
         c) Support hand on forehead rest or cheek
      5. Rotation of lens
         a) Hold with three fingers of one hand
   F. Illuminating the angle
      1. Light source zero degrees (perpendicular to pupil)
      2. Low/med magnification
      3. Parallelepiped – 4 mm width
   G. Lens Removal
      1. Break seal
         a) Rock lens
         b) Look nasal and press on temporal sclera through lid
         c) Ask patient to squeeze lids shut
      2. Irrigation of coupling solution
      3. Check corneal integrity
II. Interpreting the View

A. Angle anatomy
   1. Iris
      a) Blood vessels in stromal layer with radial orientation
      b) Inserts into face of CB posterior to SS (rarely inserts into SS)
   2. Ciliary Body
      a) Functions: aqueous production/regulation, accommodation, secretion of hyaluronate into vitreous, blood aqueous barrier
      b) Circular muscle fibers (accommodation); Longitudinal muscle fibers (pulls open TM and Schlemm’s canal)
      c) Ciliary body face: portion that borders the anterior chamber; uveoscleral outflow
   3. Scleral Spur
      a) Site of attachment for the longitudinal muscle of the CB (pulls on spur and opens TM)
      b) Yellows with age
   4. Trabecular Meshwork
      a) Aqueous outflow
      b) Deepest layers most resistant to outflow
      c) Anterior meshwork usually non-pigmented, posterior meshwork becomes more pigmented over time (more flow through posterior TM)
      d) Most TM pigment is intracellular (ingested through phagocytosis)
   5. Schlemm’s Canal
      a) Lies at the base of the scleral sulcus (not visible)
      b) Drains into venous system
      c) Can close under pressure
   6. Schwalbe’s line
      a) Transition zone between TM and corneal endothelium
      b) Transition from scleral curvature to steeper corneal curvature

B. Normal Variants
   1. Iris processes
      a) Uveal extensions from the iris to the TM
      b) Usually insert close to SS but sometimes extend to Schwalbe’s
      c) Usually fine and extend into posterior TM – follow concavity of angle – do not inhibit iris movement
      d) Can be broken in angle recession
   2. Sampaolo’s line
      a) Settling of pigment on or anterior to Schwalbe’s line
      b) Flat in most eyes but can form a ridge (most often inferior)
   3. Posterior Embryotoxin
      a) Prominent anterior Schwalbe’s line
      b) Usually a normal variant, but can be associated with Axenfeld-Rieger Syndrome
   4. Blood in Schlemm’s canal
      a) Can occur if large diameter CL compresses episcleral veins or when IOP is low and episcleral pressure high
   5. Angle Vessels
      a) Normally have radial orientation in iris and normal caliber (neovascularization would be fine and often crosses the scleral spur)
      b) More visible in light irides
Station #2
I. Corneal Wedge Technique
   A. Projector will be linked to one of the slit-lamps
   B. Instruction
      1. indications
      2. set-up
      3. interpreting view
   C. Thin slit lamp beam – slightly offset
   D. Reflection from inner and outer cornea – beam illuminates interface between cornea and opaque sclera
   E. intersect at Schwalbe's line (anterior border of TM)

Station #3
I. Recording Gonioscopic Results – self practice test
A. Schaffer System
1. Angle between iris and trabecular meshwork

<table>
<thead>
<tr>
<th>Grade number</th>
<th>Angle width</th>
<th>Description</th>
<th>Risk of closure</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>45-35˚</td>
<td>Wide open</td>
<td>Impossible</td>
</tr>
<tr>
<td>III</td>
<td>35-20˚</td>
<td>Wide open</td>
<td>Impossible</td>
</tr>
<tr>
<td>II</td>
<td>≤20˚</td>
<td>Narrow</td>
<td>Possible</td>
</tr>
<tr>
<td>I</td>
<td>≤10˚</td>
<td>Extremely narrow</td>
<td>Probable</td>
</tr>
<tr>
<td>Slit</td>
<td>slit</td>
<td>Narrowed to slit</td>
<td>Probable</td>
</tr>
<tr>
<td>0</td>
<td>0˚</td>
<td>Closed</td>
<td>Closed</td>
</tr>
</tbody>
</table>

B. Spaeth System
1. Level of iris contact to wall of angle
   - A = anterior to TM
   - B = behind Schwalbe’s line (in area of TM)
   - C = posterior to scleral spur
   - D = deep into ciliary body face (visible band of anterior CB)
   - E = extremely deep (wide band of CB visible)

2. Width of angle
   - Angle made by line tangential to iris and line tangential to face of the TM
     • 0-40˚

3. Configuration of iris
   - s = steep or convex
   - r = regular or flat
   - q = queer or concave

C. Scheie System
1. Angle structures visible
   - O = entire angle visible with wide ciliary body band
   - I = iris obscures part of ciliary body
   - II = nothing posterior to TM visible
   - III = posterior TM not visible
   - IV = no structures posterior to Schwalbe’s line visible

2. Angle pigmentation
   - 0 (no pigmentation) to IV (heavy pigmentation)

II. Treatment of Acute Angle Closure
A. Topical Beta-blocker 0.5% and or Apraclonidine 0.1%
   1. Check pressure q15-30 minutes

B. Compression gonioscopy to temporarily open angle and force fluid into TM

C. Prednisolone Acetate 1% (q15-30 min x 4 doses then hourly)

D. Oral Acetazolamide 500mg (two 250mg tablets)

E. Hyperosmotic agents: 3-5oz oral glycerin or isosorbide over ice

F. Pilocarpine 1-2% only in cases of phakic pupillary block or angle crowding
   1. Q15 minutes x 2 doses
   2. Do not use in aphakic/pseudophakic pupillary block or mechanical closure of angle

G. Maintain pressure with medical treatment as necessary and refer within 1-3 days
   1. Topical Beta-blocker 0.5% bid
   2. Acetazolamide 500mg sequel po bid
   3. Prednisolone Acetate 1% q 1-6h
   4. Pilo 1-2% qid (phakic pupil block or angle crowding)
Station #4

I. Videography presentation
   A. Normal angles
      1. Identifying structures
      2. Identifying normal variants
   B. Abnormal angles
      1. Identifying abnormal structures
   C. Self-Practice Test (answers at end)

II. Photographic Presentation
   A. Normal angles
      1. Identifying structures
      2. Identifying normal variants
   B. Abnormal angles
      1. Identifying abnormal structures
   C. Self-Practice Test (labels provided after each photo)