AUDIO, VIDEO AND LIGHTING

JUSTIN TRIEGER,
DIRECTOR OF NEW MEDIA AND DISTANCE LEARNING
NEW WORLD SYMPHONY
Microphones Types

Dynamic – contains a diaphragm or coil inside of a magnetic field that is physically moved by sound pressure.
Microphones Types

Condenser - uses a capacitor to convert acoustic energy into electrical energy. Condenser microphones require power from a battery or external source. The resulting audio signal is stronger signal than that from a dynamic.
Microphones Types

Ribbon - uses a thin aluminum, duraluminum or nanofilm of electrically conductive ribbon placed between the poles of a magnet to produce a voltage by electromagnetic induction.
Polar (Pickup) Patterns

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Omni-Directional</th>
<th>Sub-Cardioid</th>
<th>Cardioid</th>
<th>Super-Cardioid</th>
<th>Hyper-Cardioid</th>
<th>Bidirectional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage</td>
<td>360°</td>
<td>150°</td>
<td>131°</td>
<td>115°</td>
<td>105°</td>
<td>90°</td>
</tr>
<tr>
<td>Angle of Maximum Rejection (null angle)</td>
<td>—</td>
<td>180°</td>
<td>180°</td>
<td>126°</td>
<td>110°</td>
<td>90°</td>
</tr>
</tbody>
</table>

**MORE REJECTION**
Mixing Consoles

Analog

Digital
Audio Processing

- Equalization
- Compression
- Expansion
- Acoustic Echo Cancellation (AEC)
Managing Latency

• Processing adds delay
• Close-miking
• Near Field Monitoring
• One foot of physical distance = 1ms of latency
Managing Echo

- Rooms have resonant frequencies. Equalize them out.
- Use dynamic, close mics
- Place monitors off-axis from microphones
- For non-ideal acoustic spaces, resort to processing
Proper Physical Setup
Proper Physical Setup

HDMI – High Definition Multimedia Interface. EIA/CEA-861 standard. Up to 18Gbit/s, but not for common usage.


Component – Analog standard. Breaks the signal into Y, Pb and Pr.
Common Video Signal Specifications

(Good)

HD-SDI/SDI – Professional standard, fast, long cable runs (100M+), uncompressed

HDMI – Good quality A/V, ubiquitous, cheap

DVI – Compatible with HDMI, fast, can easily convert to analog (VGA)

Component – very fast, common in devices
Common Video Signal Specifications

(Bad)

**HD-SDI/SDI** – Expensive, doesn’t interface easily with consumer gear

**HDMI** – SLOW, limited cable length without a repeater, limited resolution

**DVI** – limited cable length, will be replaced by DisplayPort

**Component** – Limited resolution, limited availability in newer devices
Display Options

- Latencies range from 14 – 68ms
- OLED/Plasma are worse generally
- Use native resolution of monitor
Display Options

- Latencies range from 9 – 112ms
- Excellent database here: http://www.displaylag.com/display-database/
- Use native resolutions
- Don’t be tricked by refresh rates
Display Options

- Latencies range from 18ms – very high
- Use analog inputs for best results
- Use native resolutions
Display Options
Three-point Lighting

- **Key Light** – shines directly upon the subject and is the principal illuminator
- **Fill Light** – also shines on the subject, but from an angle relative to the Key
- **Back Light** – shines on the back of the subject to distinguish them from the background
Questions?