ITS Television Studio
User Training Notes

Usage Policy:

Studio Floor Only + Lights - First years must have tutor or lecturer supervising, 2yr and above OK subject to availability

Full studio+ Control booth – all users must have 1 staff member trained in studio use present

Working hours 8.30am – 4.30pm (weekends require special arrangements with security, which means there MUST be a staff member present. This is for on – off special sessions only as a last resort due to the complexities of access arrangements)

Externals – Case by case basis – must have staff member present – will charge.

Health + Safety + Housekeeping
Each group using the studio must be given a health and safety briefing at their first session – this can be done by either an ITS staff member or the supervising lecturer / Tutor, but must include the following points:

1. The Studio is an Industrial environment with numerous hazards. Special care must be taken. No fooling around.
2. Beware of cables on the floor (especially the camera feeds) Do not stand on any cables, make sure they don’t loop off the ground. Camera feed cables must be laid back in a Figure 8 pattern to protect cables and prevent looping and snagging.
3. Beware of lighting fixtures – these can be at head height. Lighting cables must be kept tidy and any floor stands must have sandbags. Turn lights off when not required. Beware of electrical loadings.
4. Fire escapes – 2 exits in studio must be kept clear. Highlighted with lumo tape. Assembly area is end of Main car park near the motorcycle parking bay. Follow instructions of ITS floor warden.
5. There is a first aid kit located at the ITS Service Desk counter.
6. All injuries or safety incidents must be reported to Service Desk Staff to ensure they are correctly recorded.
7. The studio is not part of the normal cleaning programme (This is so sets etc. will not be disturbed) so users are responsible for cleaning up after themselves – including sweeping the floor and vacuuming the carpets if required (cleaning gear is in the booth Ante-room).
8. Do not put any food scraps in the studio rubbish bin – It doesn’t get emptied very often so could get pretty unpleasant!
9. Cover the Green Screen floor with the carpet mats provided after use. Do not drag furniture across the green screen. Wear clean, non-marking shoes.
10. Stack seats tidily in the storage racks after use. DO NOT move furniture between the studio and teaching room. Be careful moving items on the storage racks – heavy items should be on the bottom shelf only.

11. Toilets are down the hallway - schedule breaks between shoots to avoid disruption – remember door will lock when closed!

12. Overhead lights must not be disconnected from their mounts except by the ITS technician. Lights can be moved around on their mounts providing it is done with care. Use the ladder provided – only one person on the ladder at a time. Adjustments can be made with the adjuster pole. All lights must have safety strops at all times (one at the top of mount, the other at the fixture)

13. All Sets and props used in a production must be removed from the studio at the end of the course. There is no room in the studio for old items to be left behind.
Studio layout

- Green Screen
- Lighting dimmers
- Lighting Control
- Cameras
- Mixer Rack
- Large steps
- 4
- 5
- 6
- 7
- 8
Storage Areas:

1. Spare Lamps, Backdrop drapes
2. Microphones, lead testers etc.
3. Folding chairs and tables, Staging Flats x3, Green Boxes, misc. furniture
4. Misc. drapes, Microphone stands, White balance boards, Mirror, Broom, Brush and Pan, rubbish Bin
5. Technician storage – leads, Maintenance equipment etc.
6. Cleaning gear – Mop, Bucket, Vacuum Cleaner
7. Technician store Room – ITS staff only
8. Audio and intercom cables

Quick Reference Cards

Abbreviated instructions for the use of the TV studio are in the form of quick reference cards. There is a full set of cards (Colour coded) at the director’s station in the control booth. Each other work station has the page applicable to that task affixed to the desk. There is a smaller set of cards on the TV studio floor for the floor manager's reference. It is normally on the trolley with the studio floor Monitor.
A word document with notes on setting up VLC media player on the insert Video PC is on that machine’s desktop.

PC Log In details

Used on the Insert Vid, Char Gen and Autocue PCs (the desktop on each PC is set up correctly for each task when using this log in)
User Name: tvstudio
password: television1

Opening and setup

Control Booth:

- Lights on LH wall near doorway – dim as required
- 3x Master power switches on RH side wall – TURN ON
- Log in to Computers:
  - Record PC
  - Vid Insert
  - Char Gen
  - Autocue
  - Check Timer for LED wash lights is ON (see Notes later)

Studio Floor:

- Fluoro light switches behind main door – turn off during shooting
- Aircon and heater switches on wall above lighting desk
- Position cameras as required (check cables are tidy)
• Position and adjust lighting – use large ladder and adjuster pole (stow ladder after use)
• Position set as required
• Adjust backdrop curtains if required
• Connect microphones to audio inputs on wall near control booth door.
• TV set on studio floor on and selected to HDMI input. Mute audio.
• Health and Safety briefing for crew / talent / visitors as required

Shut Down

Control Booth:
• Recording has been saved / exported
• All computers logged off
• Audio mix slides down
• Turn off 3x Master switches on RH wall (DO NOT turn off any other switches)
• Check room is tidy – seats against desks
• Remove rubbish – place rubbish bin in hallway outside studio door.
• Turn out all lights
• Close and LOCK control booth doors

Studio Floor:
• Production lights off
• Floor TV Off
• Microphones and leads packed away
• Cameras parked with pedestal brakes locked
• Cables tidied out of walkway
• Set packed away as required
• Remove rubbish – place rubbish bin in hallway outside studio door
• Check room is tidy – seats stacked etc
• Aircon / heaters OFF
• All personal belongings removed
• All lights off
• Studio door closed and locked
• Return access card to SD Counter
Camera Information

The 3x Cameras are Panasonic HMC-AC255 Camcorders, but these are installed in “Nipros” Studio build up kits. These protect the cameras and ensure solid mounting for LCD Viewfinders and signal processing equipment. The Nipros kits include built in intercom sets. Focus control is on the LH tilt handle, Zoom is on the RH tilt handle. The RH Zoom module also has a button which will change the viewfinder display to Programme video out – this is useful for setting up greenscreen shots.

Cameras 1 and 3 should have lens caps fitted when not in use

AWB white balance button is located at the front of each camera under the lens. Focus on a solid white panel (There are several old shelves stored in the studio for this purpose) and hold the AWB button for 2-3 seconds.
The cameras are mounted on Vinten pedestals - these can be raised or lowered by releasing the lock on the pedestal column. They should be pressurised enough to hold position or even raise slightly without effort – if the camera drops, it suggests the pressure is low and needs recharging – see the ITS Technician to have this done.

**UNDER NO CIRCUMSTANCES CHANGE THE POSITION OF THE CHARGING CONTROL KNOB**

The heads have pan and tilt locks – these must be engaged whenever the camera is unattended. Friction control is separate and can be adjusted if required – Balance adjustment control should not be changed.

Camera cables must be coiled in FIGURE 8 Pattern when cameras are parked.
Camera Control Units and Main Equipment Rack

The main equipment rack located just inside the control booth contains the main signal processing modules for the TV studio.

From the top of the rack down, the rack modules are as follows:

1. Blackburst generator (Generates the Genlock Sync signal)
2. Genlock Distribution amplifier (distributes the Sync signal to the various cameras etc.)
3. **3x Camera control units**
   These units provide remote control of the cameras exposure settings – Iris and shutter speed can be controlled to match the cameras to the same exposure levels.
4. 3x Nipros Base units (collect the various input / outputs together for transmission along the camera feed cables
5. Intercom interface – (Converts the standard 2 wire intercom feed to 4 wire feeds for each camera)
6. BlackMagic ATEM2 Video Mixer
7. Misc. Power supplies and distribution equipment
8. Network Switch

**Other than the CCU exposure settings, no other adjustments should ever be needed on any equipment in this rack. Should any changes be necessary, contact the ITS Technician.**

Audio Mixer Desk

The Mixer is currently set up for up to 6 microphones (Patched from the panel near the studio door) 1 stereo pair from the Insert Video machine and 1 Stereo pair from a local Auxiliary source.

Main output feeds to the record PC, a secondary output feeds to the intercom as programme audio.

Each channel will need to be switched on (Push button above slider) and gain set as required. Gain for the Insert Video feed is set up correctly and should not need adjustment.
In the booth, the audio can be monitored directly using the headset on the monitor and also using the audio output on the lower Programme TV Monitor (downstream from the record PC) Volume controls on the Monitors have been set to match the levels on the record PC so shouldn’t be changed.

**Record Computer (PC)**

The record computer in the TV studio control booth is a high-spec PC running the Adobe creative Cloud suite – use Adobe Premiere to capture. It uses a BlackMagic capture card connected to the SDi feed from the vision mixer, and dual XLR audio inputs to capture the feed from the Audio mixer. Settings have been saved and should not be changed.

Log in using the standard tvstudio user login.

Open Adobe premiere. Create a new project or open an existing one. Open a capture window. The feed should appear on the lower programme monitor. It will also appear on the TV studio floor monitor. Click Capture to start recording – timecode should start running. Click stop at end of recording – it will ask if you need to rename the clip, then it goes into the footage bin. Post production editing and playback is as per normal Premiere process. Footage should initially be saved on the local machine (create a folder for each project) but can be moved later to shared drives or Google drive, or copied on to USB Stick or memory card. The machine has a Blu-ray burner so HD DVDs can be authored directly if required.

**File locations:**

When capturing, save the project and media on the local C drive (this eliminates network delays which may cause capture dropouts). When capture is complete, move the project to the Network H (Galaxy) Drive. Always ensure you are saving in the correct and logically-named folder!

**Note:** the BlackMagic capture software (which sets up the card) will need to be regularly updated to match ongoing Windows updates. Sometimes capture problems occur which can be resolved by updating this software. Advise the ITS Technician should any problems occur.
Insert Video Computer

The TV studio has a specific PC set up to feed video and background images into the studio vision mixer. It is a standard PC but the output video config is unusual. It is set in dual monitor config - the DVI output goes to the primary monitor on the desk. The VGA output goes first through an EDID minder that sets the video standard to 1920x1080 resolution, then through a VGA Ditto amplifier which splits the feed into the secondary monitor on the desk, and the feed to the mixer. The EDID minder is needed otherwise the PC sees the ditto amp and sets the resolution to 1064 x 768. The feed to the mixer passes through a Crestron HDMI scaler which converts to HDMI 1080i50 High Def video which goes into the mixer as "INS VID". Audio from the PC goes from the audio out jack to the studio Audio mixer as a stereo pair. From the mixer it is fed back into the record computer for capture.

The PC is set up with the generic base image, but has the following changes:

- Desktop background set to solid black
- Universal USB Media card reader attached
- No screen saver
- Note about config of VLC media player left as word file on desktop.
- should be logged in as "tvstudio"

Setting up VLC Media Player on Insert Video

To display media player correctly to allow frameless insert into mixer, follow these instructions:

Move to LH Monitor (#2)
Maximise window
Right click screen for options
Select View - Minimal Interface
Select View - Fullscreen
Check that "Traffic cone" appears on Screen and shows up on mixer preview display
Right click - select Open Media
Choose the media to add to playlist
Use the Play - stop and next buttons on multimedia keyboard

Character Generator

The TV studio has a specific PC set up to provide title text overlays for the studio vision mixer (Character Generator). It is a standard PC but the output video config is unusual. It is equipped with a Blackmagic Decklink HD extreme Video IO card. The input of this card is connected by SDi (BNC) to the Aux 2 output on the Vision mixer. Aux2 is configured in the mixer setup software to mirror the Preview video signal (i.e. the next input selected in the mixer). The Card output is HDMI and goes into the mixer as input "CG IN". Video standard input / output is 1080i50 HD - the mixer will only accept this standard. The primary display uses standard VGA. The Blackmagic input / outputs can only be used with compatible software.
The PC is ITSHD-STUDIOCG. This is set up with the generic base image, but has the following changes:

- Blackmagic Decklink Extreme PCI IO card installed
- No screen saver
- Deyan OnScreen Character Generator software installed
- should be logged in as "tvstudio"

**Deyan OnScreen Character Generator Software**

Onscreen is the CG software used to create titles etc. It is a simple type of CG software limited to fixed text, Crawls, time clock and pictures only. It doesn’t do rolling titles. This is sufficient for teaching purposes - there are far more sophisticated CG apps available, but they are very expensive.

The manual for the OnScreen software is on the desk beside the CG Computer.

This software takes the Preview video signal from the Mixer and overlays the graphics over the top of it, using an internal video keying process. The output then goes back to the mixer. The titles can be faded in by selecting CG on the Preview bus of the mixer, then moving it to Programme using the fader control (this will of course move the existing video to Preview, allowing the titles to be keyed). When the CG is showing, you can select different background video using the Preview bus selector buttons. DO NOT select CG on both preview and programme as some very weird feedback effects occur!

There may be a slight flicker when mixing in CG as the CG machine does not have a Genlock video Synchronising feed, unlike the camera inputs.

**Autocue Computer**

The TV studio has a specific PC set up as an Autocue machine - this is a device for presenting scripts for the presenters on a mirror system directly in front of the camera lens. The display is fitted to camera 2, which, due to the increased weight of the autocue unit, is mounted on a heavy-duty pedestal. The rig currently uses a second-hand Philips 170B monitor (chosen because of its size and 4x3 ratio) which is fed its signal via UTP cable and Extron VGA - UTP transmitters and receivers. The Receiver on the camera end does not need to be powered so long as the transmitter on the other end has power.

The PC is ITSHD-AUTOCUE. This is set up with the generic base image, but has the following changes:

- Desktop background set to solid black
- ULTRAMON installed and configured so that monitor 2 (the studio unit) is mirrored and horizontally flipped (Not a normal Windows option)
- TELEPROMPTER software installed

There are two options for displaying text on the Autocue system:
1. Use 'Word' and a scrolling mouse as the auto cue software/package.

These are the instructions to follow for the word file to show up correctly on the auto cue monitor on Camera Two.

- Open the supplied file up in 'word'.
- Under the 'View' menu, choose 'full layout' and also choose 'Full Screen'.
- On the mouse, you need to push the scroll button once, to bring up the page scrolling options.
- By moving the mouse up, the page will scroll up and by moving the mouse down the page will scroll down.
- Depending on how fast you push the mouse, will determine how fast the scrolling will go up and down the page.

2. Use the Teleprompter software

- Open teleprompter from the icon in the taskbar or start menu
- Text can be loaded by either copying and pasting from a word file, or saving the word file in plain text format and using the "open" command in Teleprompter
- Colours, size and scroll speed settings can be set in the settings bar, then select "Start" or hit enter to display. (White text on Black background is generally the most effective)
- Scroll controls as follows:
  - ESC - Exit
  - Space - Pause
  - R - Reset Pos
  - PageUp/Down - Speed
- Mouse wheel can also move text quickly to specific locations.

Teleprompter is licence - free shareware.
The Clearcom intercom has 2 channels – Channel 1 is used for communicating with crew, and Channel 2 is for talent instructions and feedback. In addition there is an “Announce” channel which allows PA – style announcements over a small speaker on the studio floor. All levels are normally set up correctly so no adjustment should be required.

**Base Station:**
- Press to illuminate each channel push to talk button – these latch on
- Programme audio from the sound mixer can be fed into each channel. There is a switch to select ON, Interrupt (mutes programme when people speak) and OFF. Normally set to OFF, but can be used for talent feedback. Volume control knob sets programme levels for both channels.
- Announce button allows PA announcement on studio floor
- Microphone and speaker on intercom panel can be used, but best results come from using a headset.

**Camera Intercoms:**
The Nipros signal process pack on the back of the camera includes the Intercom station. There is a talk switch (Normally set to OFF to avoid excessive noise) and adjustment knobs for Headset volume and sidetone.
Wireless Intercoms:
The studio has a set of 3x Wireless intercom sets. These are stored beside the lighting control panel. There is 1x headset for use by a crew member (e.g. Floor manager) and 2x listen – only earpieces that can be used by talent.
There are 6 batteries and a charger – put the batteries back on charge after use.

To use:
- Load a battery into the selected receiver pack.
- Place the receiver pack into the rubber outer beltpack.
• Connect the selected headset or earpiece
• Select PWR – ON (The headset will provide audible feedback of this)
• Press either IC1 (for crew use) or IC2 (Talent) as required
• Volume control can be adjusted using the buttons on the side.
• To speak, press the IC1 button until the light flashes.

After use:
• Disassemble packs and stow in appropriate compartments
• Clean earpieces with cleaning wipes
• Put batteries on charge

Lighting:

Lights in the TV studio are set up to allow a standard 3 point setup for a multi-person interview in each area. There is however provision to move these to suit requirements. The various overhead lights are controlled from the desk located at the back wall of the studio. The channels for each lamp are labelled (so long as the lights are not connected elsewhere!) and the White master slider should be up when in use.

The dimmer packs themselves are located in the Ante Room between the booth and the studio. They are fed by a 3 Phase power switch on the wall behind the racks. This should remain on, but if the lights are not responding to controls, check that it is still switched ON. There should be 3 red lights on each dimmer pack – missing lights show if a particular phase is out, and this would normally be caused by a blown fuse in the dimmer packs. Contact the ITS technician to fix.
• Be careful about electrical loads – especially if the lights have been re-patched. (Only ITS technician to re-patch lights)
• Use the Ladders in the studio and the Lighting adjuster pole to reposition lights. Only 1 person on a ladder at a time.
• Rigging gloves are stored near the lighting desk – use these if adjusting lights when hot. Avoid major adjustments when lights are running.
• If lamps blow, beware of flying glass – do not look at fixture immediately. Contact ITS technician to replace the lamp.
• Ensure cables are kept tidy – do not allow them to loop down near head height.
• After use, bring all control sliders down and ensure lights are off.
• Strops must be fitted to lights at all times – one at the top where the mount connects to the overhead rail system, the other connecting the fixture to the mount.
• Mountings use a 2 stage fitting at top and bottom – a button clip and a tension screw. BOTH must be positively locked. Do not attempt to disconnect, adjust or change these – ask the ITS technician if anything needs to be moved.
• Studio light mountings can be adjusted using the lighting pole provided. Do not just tilt / wrench the lights around. Adjusters are colour coded – Blue is Rotate, white is tilt and Yellow is focus. **Do not Over-rotate or over-tilt the fixtures – pay attention to the power leads as these can be stretched if the fixture is adjusted the wrong way.**
• Heights of the lights is controlled by pushing up or pulling down on the telescopic mounts. Friction / balance has been set for these – do not adjust them. After use, push lights up as high as practicable to reduce head injury risk.

**LED Wash Lights – Installed 2017**

6 LED wash lights are included in the lighting rig. The main thing to note is the control system is very different to the other lighting in the studio, which are varied in brightness by changing the power supply voltage by means of dimmer packs.

The new lights are directly controlled by “DMX512” networking, a standard for modern stage lighting (as used on our portable LED kits too). Power supply voltage is not varied, and must be consistently undimmed, so the feed to the new lights has been put through a basic power board above the dimmers. The leads have been marked so that they are never connected to the dimmers.

The DMX control signals are sent to the lights by means of “Di-Fi” wireless transmitter–receivers. The Transmitter is daisy chained into the control line from the lighting desk to the dimmer packs, and the receivers are attached to the back of each light fitting. The lighting desk is now configured as a single 48 Channel board (rather than separate 24 channel masters) to accommodate the additional control channels required. All the active channels are labelled. **Users must not change this configuration.**
Each light takes two sliders on the control board – one for intensity (Brightness) the other for colour temperature, which changes from Blue-white 5600K down to Yellow-white 3800K (which should be what they are set to in order to match the other lights).

This means there are a few potential traps. The power to the lights is uninterrupted, which means that even with all the control sliders down, the lights will be in standby with cooling fans running etc. This is not ideal as they’ll ingest dust etc, so there is a 7 day digital timer on the power supply. This is programmed to power up the lights before scheduled class times and shut them down afterwards, but could be a problem with casual use sessions. There is a manual over-ride on the timer, including provision to shut off after 4 hours automatically, but it’s a bit tricky to work, and if it isn’t set right, the power won’t shut off afterwards.

The RED mode button on the timer need to be pressed TWICE to power off or on manually – the red light on the timer will go on and the indicator on the LCD panel should return to AUTO (marked)

The other thing is DMX is a one-way communications network, which only transmits Changes in state requests. If the sliders on the control board aren’t returned to zero after use, when the power shuts off and resets on the lights, it won’t return to that state, and any subsequent change in the sliders will produce very random and unexpected results!

ALWAYS set all channel sliders to zero after use
Staging Flats
There are three staging flats stored in the Storage racks.

1. All brace links are firmly locked (Brace Links will be very stiff – this is normal)
2. Leg height pins are in place
3. Leg height knobs are firm
4. Adjust any wobble using the rubber feet

Instruction manual is on the control booth noticeboard – please read before use (and put back afterwards!)

CAUTION – HEAVY!
Minimum 2 person lift – DO NOT DRAG ACROSS FLOOR
General Recommended Practice

- Keep doors between booth and studio closed during recording
- Ensure monitor on studio floor is muted during recording to prevent feedback. It can be unmuted if playing back footage for review.
- Turn Cellphones off or set to flight mode as “handshake” signal is picked up by the audio system.
- “On Air” light switch is located behind the main entry door - turn this on when recording as it will let people using the hallway know to keep quiet.
- Air Conditioning switches are located above the lighting desk – with the lights running the room can get very hot, so use these between takes as required. Turn them off when recording as they produce an audible rumble.
- There is a Gas heater in the studio – with a switch beside the Aircon switches. If you use this, you also need to turn on the “FA Fan” (Forced Air) as the gas heater will deplete oxygen levels. Make sure it is turned off when you leave!
- The lights in the control booth are dimmable – we recommend turning them down when filming as it makes it easier to see the monitors and determine if cameras are in focus etc.
- There are 30 folding chairs stored on the racks in the studio that may be used for class or audience seating – ensure these are packed away after use
- There is a telephone in the control booth - in the event of technical problems phone EXT 4008 for assistance