

1 Introduction

This project's purpose is to create and present a proposal for the requirements, design, and floor plan of the new Broadcast Television Engineering Technology program building space at Napa Valley College.

2 Facility Requirements

The facility must support the essential activities of the Broadcast Television Engineering Technology program. These essential activities fall into the following categories:

1. Teaching
2. Administration
3. Video Preproduction
4. Video and Audio Production
5. Video and Audio Post-Production
6. Student Services
7. Viewing
8. Storage
9. Outreach

2.1 Teaching

Teaching functions to support include lecture, laboratory, and demonstration.

2.1.1 Lecture

There needs to be a space for lectures that will support the activities of 20 students and a teacher. Visual and teaching aids will include:

- blackboards and/or whiteboards
- a desk or a table for the teacher
- tables and chairs for the students
- a docking station for the teacher's laptop
- a projection system to project the screen of the teacher's laptop
- space for a high-definition television monitor to present television and video productions
- space for a professional monitor that uses SMPTE phosphors and provides professional features such as cross-pulse
- bulletin boards

2.1.2 Laboratory

There will be two types of laboratories: electronics and computer.

The electronics laboratory will include:

- workbenches for student use with work areas for individual and small group use
- demonstration workbench for teacher use

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- video camera and monitor to record and present demonstrations at the demonstration workbench
- blackboard/whiteboard
- laptop docking station
- projector and screen
- safety board
- eye wash
- test equipment
- professional-level audio and video equipment
- spare parts
- tools
- lockers for student projects

The computer laboratory will include:

- computers for use by individual and paired students
- computer for teacher use
- space for file servers
- storage for removable drives
- storage for optical media (CDs, DVDs)

2.1.3 Demonstration

Demonstrations other than in the laboratories will take place in production and post-production areas.

2.2 Administration

Program administration needs include providing personal private storage and meeting space for each member of the program faculty and staff. This will be satisfied by providing private offices for program faculty and staff. This space should include a desk, a desk chair for the office assignee, and a guest chair. Each office will have a telephone line and a campus LAN connection.

2.3 Video Preproduction

The facility should support the following aspects of preproduction:

- script reviews
- talent preparation

2.4 Video and Audio Production

The facility should support the following aspects of production:

- studio video production (studio, control room, recording/playback, synchronization services, audio patching)
- field video production (ENG (electronic news gathering), EFP (electronic field production), equipment check-out, equipment loading/transfer)
- studio audio production (music, synthesized sound, voice-over, amplification)

2.5 Video and Audio Post-Production

The facility should support the following aspects of post-production:

- video editing
- audio editing
- graphics creation and editing
- creation and editing of titles for luminance keying into productions being recorded

2.6 Student Services

The facility should support the following personal student needs:

- material storage (books, notebooks, electronics projects, video/audio/computer media, coats, raingear)
- studying (research, discussion, and reading)
- food storage, preparation, and consumption (this also is useful for the program to have such facilities when hosting events such as advisory committee meetings)
- napping

2.7 Viewing

The facility should support viewing of the following standard definition and high definition content:

- video content as it is being produced within the facility
- live audio from production PL systems
- video monitors of live productions within the facility
- prerecorded productions (audio, video)
- live commercial audio and video sources (broadcast, satellite, cable, media)

2.8 Storage

The facility should support storage of the following items:

- archived media
- unrecorded media and accessories (degausser)
- microphones and cables
- studiolights and lighting accessories (scrims, gels, light meter)
- ENG (electronic news gathering) supplies (field cameras, portable lights, reflectors, light meter, batteries and chargers, tapes)
- EFP (electronic field production) supplies (portable video switcher, portable audio board, portable CCU (camera control units), other equipment)
- equipment of historical interest
- food for student's daily needs as well as for special events hosted at the facility
- student materials
- EFP truck parking
- loading dock for equipment/supply receiving and transfer
- safety equipment

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There should be easily-accessible storage and less-accessible long-term storage.

2.9 Outreach

The facility should support ways to inform the college community about the program on an unmonitored walk-in basis, including:

- educational exhibits
- program marketing collateral
- samples of student work
- alumni information

The materials intended for presentation to the community should be accessible to visitors. The system of presentation should provide reasonable security for the materials presented, and should provide a stable environment for long-term storage of presented materials.

3 Analysis of Facility Work Flow and Use Cases

Here are additional requirements based on work flows and use cases:

- place the laboratories near the lecture area
- the demonstration areas should be close to lecture/lab areas
- administration offices should be close to the lecture/lab areas
- food and sleep areas should be away from production areas
- place student storage near or in labs
- put ENG/EFP storage near the loading dock and truck parking
- put long-term storage of items of historical interest near the laboratories
- put the studio next to the control room
- put the control room next to the recording room
- put editing bays near the graphics and title bays
- put audio room near studio and control rooms

4 Private and Public Work Area Designations

The public entry to the facility should open into the most public areas. There should be gradual gradation of public to private areas as one moves through the facility, such that adjacent areas have relatively similar privacy levels.

- most public: public entry, outreach, administration, lecture
- public: computer laboratory, viewing, study, food storage/preparation/consumption, lounge
- in-between: electronics laboratory, production studio, pre-production, post-production, student material storage
- private: production control, production recording
- most private: computer servers, storage

5 Proposed Design

The facility will be divided up into areas supporting the previously-mentioned essential activities as follows.

1. Public Entrance
2. Lecture, Computer Lab, Viewing Area
3. Electronics Lab
4. Faculty/Staff Offices
5. Production Studio
6. Production Control Area
7. Production Recording Area
8. Computer Server Area
9. Audio Recording Rooms
10. Video and Audio Editing Area
11. Program Library
12. Preproduction Meeting Areas
13. Student Locker Area
14. Lounge
15. Kitchen
16. Museum
17. Frequently-used storage
18. Long-term storage
19. ENG/EFP storage
20. Loading dock
21. Parking space for EFP vehicle

5.1 Public Entrance

The facility's public entrance will provide access to program students, faculty, and staff, as well to members of the college community and the public. Within the public entrance area will be an area for outreach presentations.

5.2 Lecture, Computer Lab, Viewing Area

The facility's support of lectures, computer laboratory, and production viewing area will be combined into one room. There will be a teaching area at one end of the room, with:

- table
- chair
- laptop docking station
- whiteboard/blackboard
- computer video projection system
- supporting material storage (like chalk and white board pens)

The students will sit at tables in rows made up of platforms of varying height in sort of an amphitheatre; each row's height will be lower than the row in back of it and higher than the row in front of it. The first row will be at the same level as the teaching area. There will be ramps providing access to the rows.

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This should be fairly cheap to construct with concrete and will be very useful in improving visibility of teaching and video presentations.

Each place at a table will have a computer.

The room will have places for speakers supporting Dolby 5.1 surround sound, and for video monitors for viewing prerecorded and live production content.

Combining the lecture, computer laboratory, and viewing area into one room makes efficient use of space.

5.3 Electronics Lab

The electronics lab will be in a separate room. This will allow controlled access to the room.

5.4 Faculty/Staff Offices

Each faculty and staff member will have individual private offices with desk, chair, telephone line, campus LAN connection, and guest chair.

5.5 Production Studio

The production studio will be a room that will have the following:

- lighting grid on the ceiling
- black background cycs
- studio cameras at one end
- a wall that can be used as a support for chroma keying, including access to both blue and green screens
- microphone connections
- a mechanical lighting patch panel and breaker box (until we get a computer-controlled lighting panel)
- PL lines
- storage for: risers, light supplies (spare bulbs, gels, scrims) and tools, ladder for lights and microphone mounting and positioning, calibration charts (gray scale, registration, back focus)

The production studio walls and door will be soundproofed so noises from outside will not get picked up by microphones. There will be an “on the air” light at all public entrances to the production studio.

5.6 Production Control Area

The production control area will contain:

- studio camera control units
- audio mixer and sources (CD players)
- video switcher
- light circuit dimmer controls (and workstation for computer-controlled lighting panel when we get one)
- production audio monitors

- monitor bridge
- PL lines
- video server workstation to facilitate production recording

5.7 Production Recording Area

The production recording area will be in a single room. It will contain the VTRs used in production that use magnetic tape as a storage medium. These VTRs will include the Betacam decks, the D-2 digital decks, the 1" tape recorder, and eventually miniDV/DVCAM decks or other decks that support currently-used digital tape formats.

This room will also contain the audio patch panel.

This room will also contain the equipment used for testing and monitoring the production video signal. This equipment currently is located in racks in the server room (white room).

5.8 Computer Server Area

The computer server area will be in a single room. This is like a typical computer server room with raised floor, halon fire extinguisher, special HVAC requirements, and card-keyed access. It will contain:

- video server
- computer file server(s)
- table with one computer workstation for convenience for software installation and troubleshooting
- master sync generator

There will be limited access to the room since there will be little need to be in the room most of the time by most program members.

5.9 Audio Recording Rooms

There will be two audio recording rooms. Each will have a computer, hookups for microphones, and audio monitors. One room will be smaller and have a synthesizer, the other will be larger with space for up to four talent (including musicians with instruments). The rooms will be soundproofed so that recordings don't pick up noise from outside the rooms. There will be a "recording" light above the door to each room to let people know when recording is in progress.

5.10 Video and Audio Editing Area

The video and audio editing area will be in a room. This room will include six video editing stations (two linear, four non-linear) and two audio editing stations. The room will be reasonably isolated from outside sounds (but not soundproofed) so that editors can concentrate on their work.

5.11 Program Library

The program library will contain all those books that Steve gets for free from publishers. In addition, there will be tables and chairs so that people can study individually and in groups.

5.12 Preproduction Meeting Areas

There will be one room for use as a preproduction meeting area, to hold up to ten people.

5.13 Student Locker Area

There will be two sets of student lockers. One set will be within the electronics lab, intended for student electronics projects. The other set will be within the lounge, intended for other study materials, coats, and raingear.

5.14 Lounge

There will be a lounge area about the size of a living room and dining room put together, with a dining table, comfortable chairs, and a couch.

5.15 Kitchen

The kitchen area will contain a microwave, a refrigerator, a sink, cabinets for condiments and plates, and drawers for utensils.

5.16 Museum

The so-called museum will contain old equipment of historical interest, such as the 2" quad tape recorder. This museum is intended for program member access, not direct public access.

5.17 Frequently-used storage

The frequently-used storage area will have equipment used for studio productions but to which access is needed relatively infrequently during a studio shoot. For example, microphones will be stored here; once the set of microphones are chosen for a studio production, the need to change them is relatively low. Blank and recycled audio and video tapes can be stored here. Production archives can be stored here.

5.18 Long-term storage

The long-term storage area will have equipment that is currently being stored in all kinds of places, but isn't used very often. This could include video tape archive storage.

5.19 ENG/EFP storage

The ENG/EFP storage area will be in a room near the loading dock. It will contain ENG equipment (field cameras, portable lights, fish poles, wind housings for microphones, batteries and chargers, video tapes for field cameras, microphone cables) and EFP equipment (video switcher, audio mixer, cables).

5.20 Loading dock

The loading dock will contain a raised area where a truck can drive up and be loaded and unloaded with equipment, as well as a receiving area protected from the weather.

5.21 Parking space for EFP vehicle

The parking space for an EFP vehicle will be of reasonable size to contain a passenger car, wagon, truck, or van, and reasonably close to the loading dock.

6 Proposed Floor Plan

The floor plan will appear on a separate sheet of paper.

Appendix 1 - Initial Design Constraints and Notes

Here are Steve's initial constraints and comments:

- The room will be large – don't be concerned with space limits.
- Create a separate editing room with edit stations. There should be a total of six edit bays, of which two are for linear editing and four are for non-linear editing.
- There is no need for a window between the studio and the control room, however it is useful for students in the control room to be able to see what's going on in the studio.
- PL should function everywhere.

Appendix 2 - Current Facility Rooms and Their Contents

Classroom/Studio

- Cameras
- Lighting (lights, light panel)
- Blue Screen (add a green screen)
- Microphone inputs
- Audio equipment storage
- Light equipment (gels, scrims) storage
- Window to the Control Room
- Risers
- Studio monitors
- EFP storage
- Bulletin boards
- Linear edit bays
- Non-linear edit bays

Control Room

- Video switcher
- Audio mixer, CD player, equalizer
- CCU/Camera engineering station
- Server control
- Light dimmers
- Monitor bridge

Server/White/Engine Room

- Video server, including racks for server hardware and table for two workstations
- VTRs (beta, D-2, 1" tape)
- Video tape archive storage
- Equipment Racks (A to D converter, master sync, time code generator, audio patch panel, monitoring and test equipment)
- Titler

Audio Room

- Leyla/synthesizer
- Voice-over microphone/recorder
- Digital processing

Graphics Room

- Computers for graphics and animation creation and editing

Laboratory

- Workbenches
- Test equipment
- Professional audio and video equipment
- Parts
- Soldering stations
- Tools
- Older equipment of historical interest