MRTS 4411.002 – Broadcast Engineering (Spring 2026)

University of North Texas | Department of Media Arts

Course Information

- **Meeting Time:** Thursdays, 9:30 a.m. – 12:30 p.m.
- **Location:** RTFP 180i – Broadcast Engineering Lab
- **Format:** Face-to-face, lab-based (meets once per week)
- **Canvas:** https://canvas.unt.edu
- **Status:** *Subject to Change*

Instructor Information

- **Instructor:** Greg Oldenburg
- **Email:** greg.oldenburg@unt.edu
- **Office:** 179
- **Office Phone:** 214-235-7058
- **Office Hours:** (in person and by appointment)

I believe broadcast engineering is learned by doing. This course emphasizes hands-on problem-solving, teamwork, and learning how to stay calm and effective when systems fail under pressure. Mistakes are part of the process, and growth comes from diagnosing, fixing, and documenting them.

Course Description

This course provides advanced, hands-on instruction in broadcast and live-production systems engineering. Students explore professional signal flow, infrastructure design, IP-based video and audio systems, large-scale routing, synchronization, and real-world troubleshooting techniques used in mobile, studio, and live-event environments.

Course Structure

- Meets once per week for three hours over a 15-week semester
- A combination of applied lecture, guided labs, and practical skill demonstrations
- Heavy emphasis on real-world workflows, teamwork, and documentation
- Culminates in a group mobile production project

Learning Outcomes

By the end of this course, you will be able to:

- Design and troubleshoot complete broadcast and live-event signal flows
- Configure, route, and certify Dante audio networks (Level 1; preparation toward Level 2)
- Build and align multi-camera SDI and IP camera chains, including basic CCU and shading
- Patch, address, and operate professional lighting consoles and DMX networks
- Specify, rack, wire, label, and document a complete mobile production flypack
- Diagnose and resolve real-time system failures during live production

Laboratory Safety

This is a hands-on engineering lab course. Students must follow all safety procedures, including:

- Wearing **closed-toe shoes every class session**
- Using equipment only as instructed
- Following proper lifting, cabling, and electrical safety practices

The University of North Texas is not liable for injuries incurred during class activities. Students are encouraged to maintain adequate health insurance coverage. Medical care is available through the UNT Student Health and Wellness Center.

Required Materials

Required (Bring Every Week):

- Closed-toe shoes (no exceptions)
- Headphones or earbuds
- Laptop computer (Mac or Windows strongly recommended)

Digital Learning Requirement:
This course includes digital components delivered through Canvas. Reliable internet access is required. Guidance for digital learning success is available at https://online.unt.edu/learn.

Grading Breakdown

Assessment	Percentage
Lab Participation & Check-offs	30%
Lab Quizzes (6 total, lowest dropped)	20%
Skill Demonstrations (3 practical exams)	30%
Final Flypack Project (group)	15%
Dante Level 1 Certification	5%

Grading Scale:
A = 94–100
A- = 90–93
B+ = 87–89
B = 84–86
B- = 80–83
C+ = 77–79
C = 74–76
C- = 70–73
D = 60–69
F = below 60

No grading curve is applied.

Course Schedule (Thursdays Only)

Week	Date	Topic	Major Lab / Deliverable
1	Jan 15	Signal Flow & System Diagramming	Draw a full OB truck – Quiz 1
2	Jan 22	Fiber, Triax, SMPTE Hybrid, Baseband Video	JWP Studios site visit
3	Jan 29	Dante Deep Dive – Clocking & Routing	Live Dante network build

4	Feb 5	Dante Certification & Redundancy	Dante Level 1 exam due
5	Feb 12	Multiviewers & Routing	Program openGear frame
6	Feb 19	IP Video – NDI, SRT, SMPTE 2110	Skill Demo 1
7	Feb 26	Camera Chains – CCU, RCP, Shading	Live shading – Quiz 2
8	Mar 5	Lighting & Console Programming	Skill Demo 2
—	Mar 12	Spring Break	No class
9	Mar 19	Sync, Timecode, PTP, Genlock	Master sync system
10	Mar 26	Mobile Production Kickoff	Groups & block diagram due
11	Apr 2	Flypack Build Day 1	Rack, wire, label
12	Apr 9	Flypack Build Day 2	Full system test
13	Apr 16	Flypack Build Day 3	Rehearse & polish
14	Apr 23	Live Production & Critique	Skill Demo 3
15	Apr 30	Debrief & Portfolio Review	Course evaluations

Schedule is subject to change. Campus closures will be communicated via Eagle Alert in accordance with UNT Policy 15.006.

Attendance & Participation

Because this course meets once per week, attendance is essential. Class begins at **9:30 a.m.** Students arriving after **9:40 a.m.** may receive a zero for the day's lab, with one excused late arrival permitted during the semester. Attendance policies align with UNT Policy 06.039.

Academic Integrity

All students are expected to follow the UNT Academic Integrity Policy (06.003): https://policy.unt.edu/policy/06-003. Cheating on quizzes, skill demonstrations, projects, or certification exams will result in disciplinary action.

Generative AI (GenAI) Policy – Limited Use

Generative AI tools (such as ChatGPT) may be used for studying, reviewing concepts, or drafting diagrams **with instructor approval**. GenAI may not be used to complete quizzes, skill demonstrations, exams, or certification requirements. Any approved use must be disclosed.

ADA Accommodations

The University of North Texas makes reasonable accommodations for students with disabilities. To request accommodations, register with the Office of Disability Access (ODA): https://studentaffairs.unt.edu/office-disability-access. Students are encouraged to discuss accommodations during office hours or by appointment.

Inclusive Learning Environment

This course values professionalism, collaboration, and mutual respect. All students deserve a learning environment free from harassment or intimidation. If you experience barriers to your success, please contact the instructor so that concerns can be addressed promptly.

This course is designed to prepare you for professional broadcast environments. Let's build systems that work when it matters most.