

Preparing for the CTS-D Certification Exam

Thank you for your interest in InfoComm's Certified Technology Specialist-Design (CTS-D) certification exam. Each exam question relates to a specific job task. The job tasks covered on the CTS-D exam, listed on the following page, serve as the structure for this resource. The purpose of this document is to help you identify the InfoComm Academy resources that pertain to the job tasks for which you need training.

Your Certification Preparation Strategy

Prioritize your needs and create a customized preparation strategy.

1. Look at the exam content online on the next page. Each task shows the number of questions appearing on the exam in that area.
2. Self-evaluate each task.
 - Certain that you have mastery of the task at the CTS-D level?
Move to the next task in the domain.
 - Not sure what the task is about or whether you need review?
Click on the task. You will be taken to a more detailed discussion of the task and available InfoComm resources.
3. Use the [Certification Preparation Worksheet](#) to track the study resources you identify as the ones you need as you go through the content outline. Printing the worksheet may help make it easier for you to track study resources as you go through the job tasks.

CTS-D Exam Content by Number of Questions

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Certification Preparation Worksheet

Use this worksheet to tally the resources that help you meet your preparation priority areas.

InfoComm Academy Resources	I should learn more	I need a refresher
Aesthetics in AV Design OnDemand		
Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry (more) Free Online Test		
Audiovisual Best Practices: Determining the Users' AV Needs OnDemand		
AV Design Reference Manual (more)		
AV Math: Aspect Ratio		
AV Math: Throw Distance		
AV Setup Guide (more)		
Basics of Audio and Visual Systems Design (more)		
Calculating Conduit Capacity OnDemand		
DES201 <i>Design Online</i> (more)		
DES212 AV Design Principles: Environment		
DES213 AV Design Principles: Infrastructure		
GEN103 <i>Audio-Video and Control System Networking Online</i> (more) Pre-test		
How Big is Your Pixel OnDemand		
How to Size a Projection Screen OnDemand		
Improving AV Project Flow OnDemand		
InfoComm Academy Glossary		

CTS Domains and Tasks

Domain A: Conducting A Needs Assessment

Task 1: Identify stakeholders/decision-makers **2%**

Can you identify the IT representative, client's agent, building manager or other decision-makers? Can you effectively communicate with diverse clients and create meaningful documentation regarding stakeholders?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry
 - Want to test your understanding of the AV Best Practices book? Register for a free online assessment.
 - View a related presentation:
[Audiovisual Best Practices: Determining the Users' AV Needs](#)

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Task 2: Identify skill level of end users **2%**

Using your knowledge to translate AV speak into lay terms, can you assess the end user's familiarity with AV systems? Solicit end users regarding AV systems familiarity, experience and information about the availability of AV support staff?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry
 - Want to test your understanding of the AV Best Practices book? Register for a free online assessment.

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Task 3: Educate the AV client

1%

Using product knowledge, can you discuss relevant technologies and present AV information to the client? Can you create and prepare presentation materials?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry

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Task 4: Review client technology master plan

2%

Can you research a client's existing system and determine the client's long term technology plans, amortization plans and determine the client's equipment support maintenance plans?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry

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Task 5: Identify clients' purchasing processes

1%

Using your knowledge of purchasing terms and processes, can you determine if the project is going to bid? Can you determine the client's standard terms and conditions? Can you determine purchase order lead times?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry
 - Want to test your understanding of the AV Best Practices book? Register for a free online assessment.

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Task 6: Research clients' business environment

1%

Can you determine what the client's business is? Can you determine the client's ratio of technology enabled rooms to personnel and determine if AV is a necessity or luxury? Can you evaluate the current use of collaborative technologies?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry

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Task 7: Define AV needs (absolutes)

2%

Can you determine if the client has an AV budget? Can you identify the client's expectations? Can you evaluate the programs that need AV support? Can you determine project schedules and timelines?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry
- View a related presentation: [Audiovisual Best Practices: Determining the Users' AV Needs](#)

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Task 8: Identify Scope of Work

2%

Can you define project responsibilities and identify AV technology requirements? Can you examine the needs assessment and create a conceptual design including budget estimates? Can you prepare a program report to summarize findings?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry
- [Audiovisual Best Practices: Determining the Users' AV Needs](#)

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Domain B: Collaborating With Other Professionals

Task 1: Review architectural and engineering drawings 3%

Can you using architectural and engineering drawings confirm room dimensions, identify room obstructions, read reflected ceiling plans, section plans and specifications, evaluate the room for deficiencies and identify potential equipment locations?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
 - or DES201 *Design Online*
- DES212 AV Design Principles: Environment

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Task 2: Identify architectural/interior design considerations 3%

Using knowledge of AV best practices, can you identify display options including signage, sightlines, viewing angles, viewing distances and other display requirements? Are you able to effectively address ergonomic issues such as maximum reach and visual acuity? Do you feel you can identify loudspeaker options including loudspeaker directional patterns, circuit theory, needed acoustical gain and potential acoustical gain?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
 - or DES201 *Design Online*
- [How Big is Your Pixel](#) OnDemand
- [How to Size a Projection Screen](#) OnDemand
- [AV Math: Aspect Ratio](#)
- [AV Math: Throw Distance](#)
- DES212 AV Design Principles: Environment
- [Aesthetics in AV Design](#) OnDemand
- Basics of Audio and Visual Systems Design

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Task 3: Identify structural/mechanical considerations 3%

Can you identify HVAC issues, equipment mounting requirements, calculate heat loads (BTU, watts), recommend equipment cooling methods or identify plumbing and fire safety issues?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
- or DES201 *Design Online*
- DES213 AV Design Principles: Infrastructure

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Task 4: Identify electrical requirements 3%

Can you identify cable pathways issues including size, destination and signal separation), bonding and grounding issues and electrical load issues? Can you identify technical power requirements, recommend electrical boxes and recommend locations for electrical outlets?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
 - or DES201 *Design Online*
- [Calculating Conduit Capacity](#) OnDemand
- DES213 AV Design Principles: Infrastructure
- Basics of Audio and Visual Systems Design

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Task 5: Identify lighting requirements 3%

Can you coordinate with a lighting consultant or electrical contractor to recommend lighting zones, lighting temperature, lighting controls, lighting angles and lighting levels? Can you measure room lighting?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
 - or DES201 *Design Online*
- DES213 AV Design Principles: Infrastructure
- Basics of Audio and Visual Systems Design

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Task 6: Identify IT requirements

3%

Using your knowledge of network systems & terminology (IP based networks), can you identify network requirements and recommend circuiting types or VPN? Can you recommend location and number of data/voice drops for AV? Can you provide a schedule of AV network appliances, identify WIFI channels and coordinate wireless frequencies with existing systems.

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
 - or DES201 *Design Online*
- GEN103 *Audio-Video and Control System Networking Online* [\(more\)](#) [Pre-test](#)
- DES213 AV Design Principles: Infrastructure
- Basics of Audio and Visual Systems Design

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Task 7: Recommend Acoustical Criteria

2%

Can you recommend noise criterion and recommend RT 60 levels? Can you measure ambient room noise and recommend noise masking systems? Can you identify potential reflection problems?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
 - or DES201 *Design Online*
- DES212 AV Design Principles: Environment
- Basics of Audio and Visual Systems Design

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Task 8: Identify life safety and security interface issues

2%

Can you evaluate physical security design issues and identify AV equipment connected to the network systems or alarm systems?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
 - or DES201 *Design Online*
- DES212 AV Design Principles: Environment
- DES213 AV Design Principles: Infrastructure

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Task 9: Identify regulatory issues

3%

Can you Can you identify health and safety issues, local code issues and accessibility items?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
 - Or DES201 *Design Online*
- DES212 AV Design Principles: Environment
- DES213 AV Design Principles: Infrastructure

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Domain C: Developing AV Designs

Task 1: Create Draft AV Design

11%

Can you identify critical system requirements and video, audio and control components and identify AV sources using an AV draft design? Can you identify signal types and lengths and plan for future AV expansion? Can you read project requirements and select appropriate AV equipment? Are you able to research API?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
 - or DES201 *Design Online*
- DES212 AV Design Principles: Environment
- DES213 AV Design Principles: Infrastructure

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Task 2: Confirm site conditions

9%

Can you compare site to plans? Can you observe deviations and document the existing plans? Can you measure and generate reports for acoustical and lighting settings? Using the existing plans, can you confirm room dimensions and verify building access?

I should learn more I need a refresher I mastered this task

Recommended study:

- AV Design Reference Manual
- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry

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Task 3: Produce infrastructure drawings

11%

Using basic drafting skills, can you produce infrastructure drawings such as conduit riser diagrams, electrical coordination drawings, TELCO/DATA coordination drawings, shop drawings and AV device location drawings? Can you produce equipment dimensional information or equipment mounting details?

I should learn more I need a refresher I mastered this task

Recommended study:

- DES212 AV Design Principles: Environment
- DES213 AV Design Principles: Infrastructure

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Task 4: Produce AV drawings

11%

Using basic drafting skills, knowledge of architectural terminology and knowledge of AV best practices, can you create schematic diagrams (audio flow, video flow and control flow)? Can you design rack elevations and custom detail drawings including plate fabrication, furniture details, wire and termination details and bracket details? Can you produce power management diagrams? Can you create AV network topography diagrams and produce DSP diagrams?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry
- DES212 AV Design Principles: Environment
- DES213 AV Design Principles: Infrastructure

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Task 5: Produce AV build documentation

10%

Using the client's scope, can you confirm design match? Can you create a detailed component list and final AV drawings? Can you write AV specifications and compile all documents?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry
 - Want to test your understanding of the AV Best Practices book? [Take This Test.](#)
- AV Design Reference Manual
- DES212 AV Design Principles: Environment

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Domain D: Conducting Project Implementation Activities

Task 1: Participate in project implementation communication **2%**

Using audiovisual best practices and written and verbal communication skills can you generate and respond to RFIs? Using audiovisual best practices and written and verbal communication skills, can you review and respond to project changes?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry

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Task 2: Perform System Verification **3%**

Using an in-depth knowledge of audio and visual theories, knowledge of acceptable signal levels and knowledge of test equipment, can you verify and perform measurements and tests to verify that the system is functioning properly?

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Task 3: Conduct system close out activities **3%**

Using written and verbal communication skills, can you demonstrate system functionality with the client, review the training program and assure client satisfaction?

I should learn more I need a refresher I mastered this task

Recommended study:

- Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry

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