



## COURSE DESCRIPTION

This course covers the systematic planning and execution of **Verification & Validation (V&V)** / **Test & Evaluation (T&E)** strategies. It emphasizes the value of V&V/T&E, decision-making methods, procedural practices, and integrating these considerations into system architecture.

## EXPECTED LEARNING OUTCOMES

- Develop systematic V&V/T&E plans that prioritize critical system functionalities and risk areas.
- Differentiate & apply strategies for both developmental testing (verification) and operational testing (validation).
- Quantify the value of testing information and make objective V&V/T&E decisions based on subjective data.
- Navigate regulatory, stakeholder, and resource considerations in V&V/T&E planning & execution.
- Integrate V&V/T&E processes effectively into system architecture and mission engineering to support & enhance system outcomes over its lifecycle.

## COURSE FORMAT

- Highly interactive **asynchronous** delivery | **7.5-week** accelerated semester
- Tailored to your **professional needs**
- Built around the **UofA Digital Engineering Factory (DEF)**
- **3-credit** hour | You may apply it towards our MS and/or PhD programs



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## COURSE SCHEDULE

### SESSION 0.5

- ▶ Course introduction and Overview
- ▶ Value and Need of Verification & Validation

### SESSION ONE

- ▶ Theory of V&V
- ▶ Developmental versus operational testing
- ▶ V&V in practice

### SESSION TWO

- ▶ Quantifying the Value of Information
- ▶ V&V/T&E Decisions in the Context of Subjective and Objective Data
- ▶ V&V/T&E Execution

### SESSION THREE

- ▶ Overview of Systematic Planning for V&V/T&E
- ▶ Developing V&V/T&E Plans
- ▶ Identification of Critical System Functionalities and Risk Areas
- ▶ Prioritizing V&V Efforts Based on System Complexity and Project Impact

### SESSION FOUR

- ▶ Quantitative Tools to Support the Design of V&V/T&E Plans

### SESSION FIVE

- ▶ Regulatory, Stakeholder, and Resource Constraints in V&V/T&E Planning and Execution

### SESSION SIX

- ▶ Architect for V&V/T&E

### SESSION SEVEN

- ▶ Emerging trends
- ▶ V&V/T&E in Context of Mission Engineering
- ▶ V&V/T&E of Intelligent Systems



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MASTERING DISRUPTIVE TRANSFORMATION & **LEADING THE FUTURE** OF SYSTEMS ENGINEERING

