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Introduction to Unmanned Aerial Systems (UAS) Flight Test Syllabus

COURSE TITLE	Introduction to Unmanned Aerial Systems (UAS) Flight Test
COURSE NUMBER	USNTPS-UAS-PAX
COURSE VERSION	AD-V15
COURSE LENGTH	80 Hours over 2 work weeks, CWS not guaranteed
DATE(S)	1-12 Feb 2016, 6-17 JUN 2016; dates subject to change and will be finalized 6 months prior to course
REFERENCES	USNTPS FTM-109
COURSE GOAL	Provide a broad overview of flight test on UAS as it pertains to Naval Acquisition
SCOPE	Entry/journeyman level exposure to UAS, including Navigation Systems, Electro-optical systems, Radar systems, Communications and Datalinks systems, theory of operation, history and lessons learned, test planning, test execution and reporting, and conduct of a practical flight test event.
TARGET AUDIENCE	The course is designed for personnel who are new government service employees and have limited or no exposure to unmanned aircraft systems, ground and flight test techniques, and systems test & evaluation. Engineer and Scientist Development Program (ESDP) personnel, entry level Flight Test Engineers (FTE), personnel transitioning to a UAS-type test activity, and contractors directly supporting a DoD contract or contract element related to UAS.
COURSE PREQUISITES	None
COURSE DESCRIPTION	The Introduction to UAS Flight Test Short Course consists of three training phases that are designed to introduce and expose students to UAS flight test methods and techniques. First, students will receive a series of technical lectures on planning and executing test flights, fundamentals of ground control station design, instrumentation, and specific component testing. Second, students will be exposed to several UAS aircraft, including specific platform briefings from program managers or senior project engineers. Lessons learned from various UAS test programs will also be discussed during this phase. The final phase consists of "hands-on" evaluation with UAS platforms. A flight period will be provided during the second week to allow students to interact with a UAS ground control station and expose students to UAS flight test operations by executing a simple UAS flight test.
COURSE OBJECTIVES	After completing this course students should have a basic knowledge and understanding of the Introduction to UAS Flight Test Short Course: 1. Test Planning, Preparation, Execution, & Reporting 2. RADAR / EO / COMMS / DATALINKS / CONTROLS & DISPLAYS 3. Unique Aspects of unmanned vs manned flight test

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COURSE MATERIALS / RESOURCES	• Instructor handouts (as needed) • Course Syllabus & Critique • DVD containing all academic lectures, pertinent Flight Test Manuals, and any additional background or supporting data files • Graduation Certificate upon completion of the course
COURSE EXERCISES	Students will participate in the following exercises: 1. Individual presentation on student background and current work assignment 2. Individual participation in Control Systems Response Type Laboratory 3. Group participation in Ground Station Familiarization & Safety Review 4. Group participation in test preparation / flight test card development 5. Group participation in flight demo exercise using an available UAS asset 6. Group participation in data reduction / analysis / deficiency identification 7. Group presentation on ground and flight demo exercise results
FACILITY ACCESS REQUIREMENTS	• Students are required to sign in to training facility at the beginning of the first day of class • CAC or visitor badge required for base access
ATTENDANCE REQUIREMENTS	• 100% attendance required • Students are expected to participate in group exercises during class. The exercises require interaction with classmates to complete.
EVALUATION	• Provided course critique is to be handed in prior to receiving course completion certificate

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Introduction to Aircraft and Systems Test & Evaluation Syllabus

COURSE TITLE	Introduction to Aircraft and Systems Test & Evaluation
COURSE NUMBER	USNTPS-SYS-PAX
COURSE VERSION	AD-V15
COURSE LENGTH	80 Hours over 2 work weeks, CWS not guaranteed
DATE(S)	7-18 MAR 2016, 15-26 AUG 2016; dates subject to change and will be finalized 6 months prior to course
REFERENCES	USNTPS FTM-109
COURSE GOAL	Provide a broad overview of Systems Flight Test as it pertains to Naval Acquisition.
SCOPE	Entry/Journeyman Level exposure to Integrated Systems, including Navigation Systems, Electro-optical Systems, Radar Systems, Communication and Datalinks Systems, theory of operation, history and lessons learned, test planning, test execution and reporting, and conduct of a practical flight test event.
TARGET AUDIENCE	The course is designed for personnel who are new government service employees and have limited or no exposure to ground and flight test techniques. Engineer and Scientist Development Program (ESDP) personnel, entry level flight test engineers (FTE), personnel transitioning to an integrated systems or mission systems test activity, and contractors directly supporting a DoD contract or contract element related to ground or flight test.
COURSE PREQUISITES	This course requires flight on a Navy or Navy-contracted aircraft. Participants must complete a flight physical and OPNAV3710-18 with their personal doctor prior to the first day of class. The OPNAV3710-18 medical form is not required if the student has a current Class II FAA Medical or a current USN/USMC-approved “up-chit”. The OPNAV3710-18 and additional instructions will be provided to the student approximately one month prior to the class start date.
COURSE DESCRIPTION	The Introduction to Aircraft and Systems Test & Evaluation short course consists of three training phases that are designed to introduce and expose students to integrated systems flight test methods and techniques. First, students will receive a series of technical lectures on airborne systems basics and flight test techniques, theory for RADAR, Electro-Optical, Displays, and Navigation systems, and planning and executing test flights. Second, students will be exposed to preparation and conduct of a 3-hr training sortie on the USNTPS Airborne Systems Training and Range Support (ASTARS) aircraft. During the sortie the students will evaluate the integrated systems in support of a mock mission, which will be defined in the TPS-provided test plan. Students will be expected to evaluate the integrated systems using techniques presented throughout the academic and technical lectures. The final phase will include a post-flight group debrief, review of data

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	collected during the sortie, classification and reporting on deficiencies discovered during the training sortie, and providing a group oral presentation to the students and instructors. The oral presentation will be approximately 30 minutes in length, focusing on proper presentation of flight test results.
COURSE OBJECTIVES	After completing this course students should have a basic knowledge and understanding of the Introduction to Aircraft and Systems Test & Evaluation short course: 1. Test Planning, Preparation, Execution, & Reporting 2. RADAR / EO / COMMS / DATALINKS / CONTROLS & DISPLAYS 3. Specific test techniques for integrated systems testing accompanying Handbook and NAVAIRINST 3905.1
COURSE MATERIALS / RESOURCES	• Instructor handouts (as needed) • Course Syllabus & Critique • DVD containing all academic lectures, pertinent Flight Test Manuals, and any additional background or supporting data files • Graduation Certificate upon completion of the course
COURSE EXERCISES	Students will participate in the following exercises: 1. Individual presentation on student background and current work assignment 2. Individual participation in Control Systems Response Type Laboratory 3. Group participation in RADAR and EO/IR Laboratory exercises 4. Group participation in test preparation / flight test card development 5. Group participation in flight exercise on the SAAB 340A ASTARS 6. Group participation in data reduction / analysis / deficiency identification 7. Group presentation on ground and flight demo exercise results
FACILITY ACCESS REQUIREMENTS	• Students are required to sign into training facility at the beginning of the first day of class • CAC or visitor badge required for base access
ATTENDANCE REQUIREMENTS	• 100% attendance required • Students are expected to bring OPNAV3710-18, current USN/USMC-approved “up-chit” or Class II FAA Medical to class • Students are expected to participate in group exercises during class. The exercises require interaction with classmates to complete
EVALUATION	• Provided course critique is to be handed in prior to receiving course completion certificate

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Introduction to Airplane Flying Qualities Syllabus

COURSE TITLE	Introduction to Airplane Flying Qualities
COURSE NUMBER	USNTPS-XFQ
COURSE VERSION	AD-V15
COURSE LENGTH	80 Hours over 2 work weeks, CWS not guaranteed
DATE(S)	11-22 April 2016; dates subject to change and will be finalized 6 months prior to course
REFERENCES	USNTPS FTM-103, FTM-108
COURSE GOAL	Provide a broad overview of flying qualities as it pertains to Naval Acquisition
SCOPE	Entry/journeyman level exposure to aerodynamics, static and dynamic stability, maneuvering and non-maneuvering flight characteristics, flight control systems, control types, handling qualities and ratings scales, history and lessons learned, test planning, test execution and reporting, and conduct of a practical flight test event.
TARGET AUDIENCE	The course is designed for personnel who are new government service employees and have limited or no exposure to ground and flight test techniques. Engineer and Scientist Development Program (ESDP) personnel, entry level Flight Test Engineers (FTE), personnel transitioning to a flying qualities or air vehicle test program, and contractors directly supporting a DoD contract or contract element related to ground or flight test.
COURSE PREQUISITES	This course requires flight on a Navy or Navy-contracted aircraft. Participants must complete a flight physical and OPNAV3710-18 with their personal doctor prior to the first day of class. The OPNAV3710-18 medical form is not required if the student has a current Class II FAA Medical or a current USN/USMC-approved “up-chit”. The OPNAV3710-18 and additional instructions will be provided to the student approximately one month prior to the class start date.
COURSE DESCRIPTION	The USNTPS Introduction to Airplane Flying Qualities Short Course consists of three phases that are designed to introduce and expose students to classic stability and control theory, test methods and techniques, and the qualitative evaluation process. Phase 1 Classroom Lectures Phase 2 Simulator Sessions Phase 3 Flight Demonstration / Limited Scope FQ Evaluation First, the students receive a series of classroom lectures on test planning, basic aerodynamics, aircraft flight controls, longitudinal and lateral-directional flying qualities to include test procedures and techniques, the handling qualities rating scale, and report writing. Second, each student receives two simulator sessions in the USNTPS sim lab. The first session provides hands-on experience with basic flight control system mechanical characteristics. The second session permits a formal review and time to practice the test techniques prior to the flight demonstration phase. Finally, each student will conduct a limited scope evaluation of the longitudinal and lateral-directional flying

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	qualities of a general aviation aircraft for the VIP Transport Mission. The students will fly with an experienced Contractor Demonstration Pilot (CDP) that will be able to discuss the basic mission tasks, demonstrate test techniques and the use of the handling qualities rating scale, and answer student questions regarding data collection and test tolerances. Following the flight, the students will reduce and analyze the qualitative and quantitative data that was collected during the evaluation flight and produce a Daily Flight Report.
COURSE OBJECTIVES	After completing this course students should have a basic knowledge and understanding of the Introduction to Airplane Flying Short Course: 1. Test Planning, Preparation, Execution, & Reporting 2. Aerodynamics / Stability / Flight Controls / Flight Characteristics 3. Specific test techniques for fixed-wing airplane flying qualities and performance testing
COURSE MATERIALS / RESOURCES	• Instructor handouts (as needed) • Course Syllabus & Critique • DVD containing all academic lectures, pertinent Flight Test Manuals, and any additional background or supporting data files • Graduation Certificate upon completion of the course
COURSE EXERCISES	Students will participate in the following exercises: 1. Individual presentation on student background and current work assignment 2. Individual participation in Flight Simulation Laboratory 3. Individual participation in test preparation / flight test card development 4. Individual participation in flight exercise on a fixed-wing propeller aircraft 5. Individual participation in data reduction / analysis / deficiency identification 6. Individual presentation on ground and flight demo exercise results
FACILITY ACCESS REQUIREMENTS	• Students are required to sign in to training facility at the beginning of the first day of class • CAC or visitor badge required for base access
ATTENDANCE REQUIREMENTS	• 100% attendance required • Students are expected to bring OPNAV3710-18, current USN/USMC-approved “up-chit” or Class II FAA Medical to class • Students are expected to participate in group exercises during class. The exercises require interaction with classmates to complete.
EVALUATION	• Provided course critique is to be handed in prior to receiving course completion certificate

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Introduction to Rotary Wing Flying Qualities & Performance Syllabus

COURSE TITLE	Introduction to Rotary Wing Flying Qualities & Performance
COURSE NUMBER	USNTPS-RFQ
COURSE VERSION	AD-V15
COURSE LENGTH	80 Hours over 2 work weeks, CWS not guaranteed
DATE(S)	11-22 JUL 2016; dates subject to change and will be finalized 6 months prior to course
REFERENCES	USNTPS FTM-106, FTM-107, ADS-33
COURSE GOAL	Provide a broad overview of Flying Qualities and Performance as it pertains to Naval Acquisition.
SCOPE	Entry/Journeyman Level exposure to rotor systems, stability, maneuvering and non-maneuvering flight characteristics, performance, handling qualities and ratings scales, specifications, conduct of a practical simulation exercise, data reduction, and specification compliance. Note that this course does not cover test planning or report writing. It is expected that the student has some level of test planning, test execution, and reporting.
TARGET AUDIENCE	The course is designed for personnel who are new government service employees and have limited or no exposure to rotary wing aircraft characteristics and test techniques. Engineer and Scientist Development Program (ESDP) personnel, entry level flight test engineers (FTE), personnel transitioning to an air vehicle test program, and contractors directly supporting a DoD contract or contract element related to ground or flight test.
COURSE PREQUISITES	None
COURSE DESCRIPTION	The USNTPS Introduction to Rotary Wing Flying Qualities & Performance Short Course introduces and exposes students to rotary wing theory, test methods and techniques, and the evaluation process. Although the exact subjects presented may vary from class to class, the typical class syllabus traditionally includes the following: <u>Week One</u>: Pitot-Static Systems Engine Assessment Rotor Systems / Flight Controls Hover Performance Vertical Climb Performance Level Flight Performance Climb/Descent Performance Longitudinal Stability Derivatives Maneuvering Stability Flight Test Techniques <u>Week Two</u>: Descent and Autorotation Performance Vortex Ring State

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	Lateral-Directional Stability Derivatives Longitudinal Dynamic Modes Lateral-Directional Dynamic Modes Flight Test Techniques Low Airspeed Flying Qualities ADS-33 Specifications Dynamic Interface Testing Pilot Handling Qualities Evaluation Process Simulation Exercise Students will be given actual flight data and asked to reduce, analyze, and conclude the performance and mission suitability of a generic helicopter for the TPS-provided mission.
COURSE OBJECTIVES	After completing this course students should have a basic knowledge and understanding of the Introduction to Rotary Wing Flying Qualities & Performance short course: 1. Rotor Systems / Stability / Performance / Specifications 2. Specific test techniques for rotary-wing airplane flying qualities and performance testing
COURSE MATERIALS / RESOURCES	• Instructor handouts (as needed) • Course Syllabus & Critique • DVD containing all academic lectures, pertinent Flight Test Manuals, and any additional background or supporting data files • Graduation Certificate upon completion of the course
COURSE EXERCISES	Students will participate in the following exercises: 1. Group participation in a rotary-wing simulation exercise 2. Group participation in data reduction / analysis / deficiency identification 3. Group presentation on simulation observations, performance analysis, mission suitability
FACILITY ACCESS REQUIREMENTS	• Students are required to sign into training facility at the beginning of the first day of class • CAC or visitor badge required for base access
ATTENDANCE REQUIREMENTS	• 100% attendance required • Students are expected to bring OPNAV3710-18 or Class II FAA Medical to class • Students are expected to participate in group exercises during class. The exercises require interaction with classmates to complete.
EVALUATION	• Provided course critique is to be handed in prior to receiving course completion certificate