



# *COURSE CATALOG*

*October 2022*



## WHO WE ARE

*ISR University employs a diverse group of former military service members, national security experts, and academic professionals to deliver innovative C4ISR, Space, and Analytic solutions.*

## WHAT WE DO

*ISR University offers a wide-range of services for multi-domain C4ISR & Space strategy, training and operations to enable operations in any domain under any conditions, from permissive to highly contested/denied environments.*

## WHY WE DO IT

*As former US Department of Defense professionals, our number one priority is to strengthen US national security - by increasing readiness and lethality, building C4ISR and Space capabilities of the US and her allies, and fostering increased interoperability for tomorrow's coalition warfighters.*

*ISR University revolutionizes learning through the innovative use of technology and resources to deliver agile, student-centric, and customer-focused courseware anywhere, at any time. Our highly qualified instructors leverage decades of operational, in-classroom, and individualized training experiences to maximize student-based learning and knowledge-sharing across a wide variety of relevant subjects for industry, military, and academic clients.*



*ISR University is part of the Integrity ISR, LLC, family of services. Integrity ISR, LLC, is a Woman-Owned Small Business.*

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# HOW TO CONTRACT WITH ISR UNIVERSITY

## **CREDIT CARD / ACH PURCHASE**

*ISR University accepts all major credit cards, PayPal, or ACH Wire Transfer.*

***COUNTRY SPECIFIC CLASSES:** Fill an entire class with only your students. You can pick dates and times that work best for you. You will receive an emailed invoice for payment.*

***INDIVIDUAL STUDENTS:** Purchase individual seats in on-going ISR University courses through ISRUniversity.com and learn alongside students from different countries and industries.*

## **DIRECT COMMERCIAL SALE (DCS)**

*Countries can establish a direct contract with Integrity ISR, LLC, which owns ISR University. DCS is best used to purchase multiple ISR University courses. This allows significantly faster delivery timelines, down to weeks as opposed to months/years with traditional Foreign Military Sales (FMS).*

## **FOREIGN MILITARY SALE (FMS)**

*Countries can request ISR University courses through the FMS process. While FMS contracts take longer, it allows countries to utilize FMF and IMET funding sources. Simply include the following language for a sole source request:*

*"We request a sole source purchase of ISR University's XXX Course(s) offered by Integrity ISR, LLC."*

*Some countries are also authorized to use FMF and IMET dollars for Direct Commercial Sale contracts.*

*Ask your DSCA Country Director for approval.*

*Integrity ISR is registered with the US State Department and is in full compliance with all US export laws. All ISR University courses are ITAR compliant.*

*\*\*No student may be a citizen of a US Sanctioned Country, including (but not limited to) Cuba., Iran, North Korea, Sudan, or the Crimea Region of Ukraine, nor an individual affiliated with an entity listed on the US Prohibited List (aka Denied Parties List).*



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## **AW 100 - FOUNDATIONS OF ANALYTICAL WRITING**

*This course reinforces an effective foundation for written communication using practical exercises and instructor led discussions on grammar rules, verb tenses, theses, paragraph formation, and writing composition. Students compose a series of reports, expository, persuasive essays to identify and execute the steps in the writing process, sentence structure and grammar. Graduates understand the fundamentals of analytical writing (including paragraph frameworks, theses, supporting arguments, views of others) and building recommendations for decision makers.*

## **AW 200 - ANALYTICAL WRITING**

*An analyst, in any industry, must gather evidence and conduct analysis while clearly and concisely communicating and contextualizing that information for decision makers. This course sharpens the analytical writer's edge - we key in on evidence, its meaning, and how to tailor customer-focused assessments. We train and educate new analysts on concepts and types of written communication, standards, analyst-customer relationships, sourcing, uncertainty, and argument mapping. AW 200 graduates writers who effectively utilize evidence, meaning, and assessments to clearly, coherently, and concisely deliver a written product.*

## **AW 300 - COLLABORATIVE ANALYTICAL WRITING**

*Collaborative Analytical Writing involves the efforts of multiple people, working as a team, to produce a written product. So much of analysis and critical thinking involves group effort - and writing is no different. Collaborative Analytical Writing offers students the ability to stretch their organization's analytic products, work together as a team, develop a sense of audience, learn the importance of peer review, and lead to a deeper understanding of the problem(s). Collaborative writers are capable of mitigating bias, avoid group think, and arrive at the truth. Graduates will be able to effectively collaborate in a team to present persuasive written arguments that assess facts and assumptions, options, views of others, and logical pathways.*

## **CT 100 - FOUNDATIONS OF CRITICAL THINKING & STRUCTURED ANALYSIS**

*Analysts must have the requisite skills to synthesize disparate information from multiple sources. This course is designed to develop critical thinking, structured analysis, and data synthesis skills for developing analysts. This course provides methodologies and techniques to improve the quality of reasoning, analysis, objectivity, and decision-making. CT 100 explores the foundations of knowledge, elements of critical thinking, logic, reason, argument mapping, biases, and logical fallacies. Graduates emerge as developing thinkers who are aware of the desired outcome of critical thinking, basic frameworks, and strategies that improve the thinking process, and begin to break down barriers to effective critical thinking.*

## **CT 200 - CRITICAL THINKING FOR ANALYSTS**

*We live in a society that mass produces information with little or no oversight. Not all of it is true, and in fact much of it is biased, logically erroneous, or even false. The challenge is to know how to apply logical methodology to judge the quality of information. Separating opinions from facts, and logical arguments from fallacy is a key skill for leaders and analysts. We are often presented with data from a variety of sources covering topics we know little about and are asked to form an assessment. Critical thinking is a fundamental competency for maneuvering this minefield. This course continues an analyst's development as we learn to recognize and integrate new information, challenge assumptions, form and leverage Socratic questioning, develop inferences from incomplete data, and generate alternate scenarios and conclusions. Graduates become intellectually agile thinkers who are comfortable in ambiguous situations with incomplete or conflicting information.*

## **CT 300 - ADVANCED CRITICAL THINKING FOR ANALYSTS**

*The true critical thinker and analyst are not as concerned with what direction a question takes as they are in seeking the truth. Advanced Critical Thinking continues the analyst's intellectual journey by imparting the philosophy of knowledge, mitigating cognitive bias, descriptive inference, argumental logic, and causal inference. The course uses tough, contemporary problems to challenge analysts' thinking, while working to set aside biases to arrive at the truth. We use a variety of evaluations to assess progress and understanding, while providing meaningful and in-depth feedback. Graduates possess advanced thinking skills to quickly and thoroughly evaluate complex situations to provide relevant, decision-ready knowledge to a diverse set of customers.*

## **CT 500 - LEADING CRITICAL THINKERS**

*An effective leader understands their own intellectual tendencies and biases, while creating a healthy environment for tackling tough problems, learning from failure, and being comfortable with ambiguity. In Leading Critical Thinkers, we explore the concepts of metacognition, intentional leadership, fostering innovation, dealing with wicked problems, and the idea of Black Swans. Our goal is to develop leaders who understand their own intellectual tendencies & biases, create healthy environments for tackling tough problems, learn from failure, and comfortable with ambiguity.*

## **CT 600 - CRITICAL THINKING FOR LEARNING PROFESSIONALS**

*The true critical thinker cultivates the skills of analysis, interpretation, reflection, evaluation, inference, explanation, problem solving and decision making. But how do you "teach" critical thinking? How do you leverage effective learning strategies, environments, and enculturation to drive towards higher level thinking? This course explores how instructors, facilitators, and evaluators can incorporate critical thinking techniques into their courseware. Our goal is graduates are empowered with the knowledge and capabilities to elevate and normalize critical thinking strategies, concepts, competencies and standards into highly effective learning environments.*

## **CT 700 - CRITICAL THINKING FOR EXECUTIVES**

*Leaders and Executives looking to create a culture of critical thinking and analysis must first themselves understand, practice, and apply the concepts in all aspects of their thinking, engagements, and decisions. A critically thinking leader understands the impacts of their decisions across the organization, seeks diversity in thought, understands connections between ideas, identifies relevant arguments, and works through inconsistencies in reasoning to make the right decision. Critical Thinking for Executives uses a seminar-based approach to better understand our own intellectual tendencies & biases and create healthy environments for tackling tough problem sets. We discuss wicked problems facing today's organizations, build out concise problem statements, lead an evidence-based discussion of the issues, and develop reasonable course of actions to solve your wicked problems.*

## **DA 100 - FOUNDATIONS OF DATA ANALYTICS**

*Data Analytics is an ever-evolving discipline focusing on new, predictive modeling techniques with innovative analytic tools to translate data into clear, actionable insights and recommendations. The Foundations of Data Analytics trains and educates analysts on the very essence of what is data, how to mine and shape data, and how to effectively report and visualize the data to draw conclusions. The course uses the Socratic method to enhance student's ability to interact, form meaningful conclusions, and demonstrate critical thinking skills. The course explores various visualization tools and techniques to effectively communicate results in written and verbal formats. Graduates will be able to transform raw data into effective visualizations, draw conclusions, provide predictive analysis, and influence outcomes and decisions.*

## **DA 200 - THE ART & SCIENCE OF DATA ANALYTICS**

*Data Analytics is as much a science as it is an art. The effective data analyst understands not only how to interpret what the data is telling them but draws inferences and begin to conduct predictive data analytics. This course covers advanced visualization and design techniques designed to clearly and effectively communicate results and demonstrate expected future events, behavior, or trends. Analysts will understand factors that drive uncertainty, examine variables to reduce uncertainty, use predictive analytics to describe future outcomes, and inform ways leaders can influence the outcome.*

# **CYBER - FORCE DEVELOPMENT**

## **CYBER 910 - CYBER SECURITY STRATEGY**

*Taught by former Air Force cyber operations and defense senior leaders, this executive-level course takes senior leaders, operators, decision makers and staff members through both a historical review and the latest thought leadership on issues of cybersecurity. This course doesn't require technical acumen or information technology expertise, but focuses on a strategic outlook towards cybersecurity, integration with multi-domain operations, dependencies, and other key points of knowledge in this timely and increasingly critical mission area.*

## EFFECTIVE COMMUNICATION

### **ENG 200 - ENGLISH FOR CYBER**

English is absolutely necessary to work in Cyber, and the English for Cyber Course offers professionals, both military and civilian, focused English language training on the specialized vocabulary and conventions used in spoken and written forms in the field. The course is heavily scenario based, allowing students to actively practice their skills. Developed by Cambridge certified language instructors and cyber professionals, the curriculum focuses on the different communications challenges the field presents: Incident Reporting, Client Communications, Threat Reports, and Management Proposals. The goal is to improve individual and team effectiveness through better written and spoken English communication.

## FACULTY DEVELOPMENT

### **FD 600 - EFFECTIVE FACILITATION FOR LEARNING PROFESSIONALS**

Effective Facilitation transforms highly effective instructors into facilitators - equipped with the techniques to create a learner-centered program. Students will discuss their current teaching philosophy and how to transform it into a facilitator model using combinations of traditional and social learning approaches. Future facilitators will be immersed in the Socratic method of teaching, where learning is based on asking and answering questions - moving from rote memorization to the creation of knowledge and wisdom.

### **CT 600 - CRITICAL THINKING FOR LEARNING PROFESSIONALS**

The true critical thinker cultivates the skills of analysis, interpretation, reflection, evaluation, inference, explanation, problem solving and decision making. But how do you "teach" critical thinking? How do you leverage effective learning strategies, environments, and enculturation to drive towards higher level thinking? This course explores how instructors, facilitators, and evaluators can incorporate critical thinking techniques into their courseware. Our goal is graduates are empowered with the knowledge and capabilities to elevate and normalize critical thinking strategies, concepts, competencies and standards into highly effective learning environments.

## **ISR 100 - ISR FUNDAMENTALS**

*The ISR Fundamentals Course provides students an introductory level understanding of security, intelligence disciplines, doctrine, EM theory, enemy threat systems, unit operations, ISR processes, preparation of the environment, ISR assets, geospatial information and services, analytic principles, and critical thinking skills. Students will demonstrate the ability to research, develop, and deliver various intelligence products to support air operations. The course contains periodic practical and Capstone exercises to evaluate student performance and understanding.*

## **PED 100 - INTELLIGENCE PLANNING CYCLE**

*The Intelligence Planning Cycle is a network of interrelated, simultaneous functions that can feed, and be fed by, other functions. The five phases of the framework enable effective use of ISR operations by planning, collecting, processing and exploiting, analyzing and producing, and finally disseminating. Students in this course will be able to understand and apply the Intelligence Planning Cycle within the Air Tasking Order or Targeting Processes to achieve Commander's objectives. Students are evaluated using knowledge and practical application exercises.*

## **EM 110 - ELECTROMAGNETIC SPECTRUM FUNDAMENTALS**

*The electromagnetic (EM) spectrum has increasingly propagated in military importance since the introduction of two-way radios in the very early 1900s. The EM spectrum exists in a large range of frequencies and wavelengths with common applications for military use in the radio, microwave, infrared, and visible regions. The Electromagnetic Spectrum Fundamentals Course introduces students to key concepts, terms, and applications of the EM spectrum. Students will understand how wavelength, frequency, and power shape the military's use of the spectrum. Students will contend with interactive courseware and practical application exercises designed to gauge student performance and understanding.*

## **IADS 100 - IADS FOUNDATIONS**

*Integrated Air Defense Systems (IADS), at their very core, bring together sensors, lethal and non-lethal capabilities, battle management, and C4I to defend a nation's airspace. This course explores sensors as well as surface-to-air and air-to-air threat capabilities and employment concepts. Students will understand terms and concepts associated with lethal and non-lethal engagements and demonstrate the ability to provide effective threat assessments for mission planning. IADS Foundations contains knowledge and practical application exercises as well as performance evaluations to improve tactical intelligence support.*

## **IADS 200 - RETHINKING IADS**

*Integrated Air Defense Systems (IADS) rely on effective battle management and C4I to harness, and bring together, the full capabilities of a nation's air defense capabilities. This course is designed to improve operational level understanding of how battle management and C4I contribute to nation's ability to defend its airspace. The course considers C4I subsystems, associated functions, and components; tracking mechanisms; as well as battle management types, authorities, engagement zones. Intermediate IADS compels students to think through how each component impacts a commander's ability to control and defend their airspace and associated impacts on the IADS kill chain. The course relies on practical performance exercises and evaluations to improve intelligence support to operations at the tactical and operational levels.*

## **IADS 310 - ADVANCED IADS ANALYSIS**

*China and Russia continue to leverage rapidly modernized military capabilities to defend their airspace using a layered approach. Their technology and tactics, techniques, and procedures have been widely exported making the risk of escalation in any potential conflict all the more likely. This course is designed to improve intelligence personnel's ability to operate, and support operations, in contested environments against a sophisticated and modern Integrated Air Defense System (IADS). The course addresses IADS concepts with a particular focus on battle management and C2; tailorable for specific threat environments to optimize host nation capabilities against likely adversaries in various areas of operations in accordance with host nation requirements. The course includes knowledge and application exercises designed to improve intelligence support to operations at the tactical, operational, and strategic levels.*

## **ISR - FORCE DEVELOPMENT**

## **LDR 110 - INTELLIGENCE OFFICER FUNDAMENTALS**

*The Intelligence Officer Fundamentals Course provides students the opportunity to develop technical intelligence skills to support host nation, peacekeeping, contingency, and coalition mission sets. The course builds critical thinking skills and structured analytical techniques to support predictive and operationally relevant analysis. Officers gain experience in electromagnetic theory, integrated air defense systems, targeting, coalition forces, space and missiles, fundamentals of mission planning, intelligence disciplines, ISR operations, and ISR applications. The course is taught by former USAF certified instructors using a variety of experiential learning and measurement devices. Intelligence Officer Fundamentals contains periodic practical and Capstone exercises to evaluate student performance and understanding.*

## **LDR 410 - EMERGING ISR SENIOR LEADERSHIP**

The Emerging ISR Senior Leadership Course enhances the knowledge of ISR leaders on the principles and concepts required for leading within an ISR Enterprise. Students participate in practical exercises and experiential learning designed to enhance knowledge and understanding of policy, strategy, support to operations, and developing ISR personnel. Students will have an advanced understanding of skills and techniques to maximize portfolio investment, capabilities, and synergies between leadership, people, operations, and the ISR Enterprise. The Emerging ISR Senior Leadership Course contains practical application exercises to guide student development and gauge understanding.

## **LDR 910 - ISR STRATEGIC LEADERSHIP**

The ISR Enterprise Leadership Course allows O-6 and above senior leaders the opportunity to synthesize and apply leadership concepts, competencies, and principles required to lead an ISR Enterprise. The course, taught by former USAF general officers, helps prepare leaders new to the intricacies of the ISR world to make the transition from informed ISR consumer to ISR leader. This course requires students to think through strategic problems faced by senior ISR leaders in a complex, dynamic, and combined environment. The course takes a case study approach to highlighting challenges and lessons learned on ISR policy, strategy, support to operations, and building a professional intelligence cadre.

# **ISR - TARGETING**

## **TGT 110 - FUNDAMENTALS OF TARGETING**

Targeting is the process of analyzing target systems and then selecting and prioritizing targets, matching an appropriate response to them, and considering operational requirements and capabilities. This course develops an understanding of key concepts, processes, principles, and aspects of targeting and related roles and responsibilities. It covers key targeting frameworks including D3A (Decide, Detect, Deliver, and Assess), F3EAD (Find, Fix, Finish, Exploit, Analyze, and Disseminate), and EBO (Effects Based Operations) to guide thought processes on design, planning, execution and assessment to address Desired End State and Commander's Objectives. The course will give the students an understanding of the variations and challenges between various typologies of munitions. Fundamentals of Targeting contains embedded practicums and concludes with a Targeting Strategy Capstone exercise.

## **TGT 210 - TARGET DEVELOPMENT I**

Targets should be tied to objectives across strategic, operational, and tactical levels. This course builds on the Fundamentals of Targeting by exploring Phase 2 of the Targeting Cycle with a focus on Target System Analysis and Prioritization to achieve the Desired End State and meet Commander's Objectives. The course provides skills to analyze, assess, characterize and document potential targets for action including an understanding of Centers of Gravity and use of tools and templates to maximize effectiveness. The course contains embedded practicums and concludes with a Target Systems Analysis Capstone Exercise.

## **TGT 211 - TARGET DEVELOPMENT II**

Every target has characteristics that form our ability to detect, locate, identify, and classify them for current or future action. This follow-on course to Target Development I examines Entity-Level Target Development, Deliberate Targeting, and Target List Management as part of Phase 2 of the Targeting Cycle. The course enables the understanding of a target's operational importance, considerations for action, and impact on the Target System as a whole. This course will solidify skills empowering students to develop target graphics and documents for both operational and tactical requirements as well as archival and database requirements. Students will be effective in both time sensitive and deliberate targeting. The course contains practicums and concludes with a Deliberate Targeting Capstone Exercise.

## **TGT 212 - TARGET CAPABILITIES ANALYSIS**

The Targeting Cycle must demonstrate a logical linkage and analytical reasoning between tasks, effects, objectives, and guidance. This course is designed to develop an understanding of the practical application of options available to a commander in order to effect a target. It refines an analyst's capabilities to evaluate all available capabilities against a target's critical elements and includes target vulnerability analysis, capabilities assignment, feasibility assessment, and effects estimate. The course contains embedded weaponeering practical exercises and concludes with a Capabilities Analysis Capstone Exercise.

## **TGT 213 - TARGET FORCE ASSIGNMENTS**

The Targeting Cycle inevitably moves from theoretical to actual operations informed by considerable focused and detailed intelligence support. This course focuses the first three phases of the Targeting Cycle towards operational employment of capabilities to effect target(s). The course is grounded in developing an understanding of, creation, and approval of an Integrated Prioritized Target List (IPTL). It links capabilities to available forces, sensors, and weapons systems. The course contains embedded practical exercises and concludes with an IPTL Capstone Exercise.

## **TGT 214 - MISSION PLANNING AND FORCE EXECUTION**

Planning and execution relies on detailed insight into the outcomes, reasoning and assumptions made during previous phases of the Targeting Cycle. This course examines the detailed planning required for force execution and understanding how changes in the operational environment impact the targeting process. The course uses principles of dynamic targeting as a foundational framework. The course contains embedded practicums and concludes with a Dynamic Targeting Capstone Exercise.

## **TGT 215 - COMBAT ASSESSMENT**

Understanding the results of target engagement requires a knowledge of the commander's objectives, guidance, and desired end state. This course prepares students to assess activities, determine effectiveness, and make recommendations regarding future operations as part of the final step of the Targeting Cycle. The student applies knowledge gained from the first five phases of the Targeting Cycle to conduct Battle Damage Assessment, Munitions Effectiveness Assessments, and re-attack recommendations to inform operational decisions. The course utilizes embedded practical exercises and concludes with a BDA Capstone Exercise.

## **TGT 310 - WEAPONEERING & COLLATERAL DAMAGE ASSESSMENT**

*Achieving the commander's objectives relies on a disciplined, repeatable process to determine the lethal or nonlethal means required to create a desired effect AND determine the undesired consequences and hazards from weapons effects. This course uses established rules of engagement, law of war, and other guidance to allocate weapons and weapons effects against a target(s). Students will examine elements of target vulnerability, delivery accuracy, damage criteria, and weapon reliability against military objectives while considering the potential to create unintentional or incidental injury or damage. Weaponneering and Collateral Damage Assessment utilizes embedded practical exercises and concludes with a Capstone Exercise.*

## **TGT 311 - HVI TARGET DEVELOPMENT**

*High Value Individual Target Development relies on network understanding and exploitation, patterns of life analysis, and intelligence driven, precise, detailed targeting operations. This course applies the F3EAD (Find, Fix, Finish, Exploit, Analyze, and Disseminate) methodology using a massed, persistent approach to ISR cued to a multi-source intelligence apparatus to find and fix an HVI's precise location amidst a cluttered environment. The course concludes with an HVI time-sensitive targeting Capstone Exercise.*

## **TGT 312 - PRECISION POINT MENSURATION**

*Collateral damage may have unintended operational or strategic implications and a key to reducing impacts is the ability to precisely measure any point to determine absolute latitude, longitude, and elevation. Precision Point Mensuration enables students to provide geophysical aimpoints within acceptable accuracy standards using approved sources and specified assurance levels. The course is taught by certified targeting professionals and includes both practical and Capstone exercises to certify student proficiency.*

## **TGT 315 - TARGETING PROFESSIONAL**

*Targeting is the process of analyzing target systems and then selecting and prioritizing targets, matching an appropriate response to them, and considering operational requirements and capabilities. This course develops an understanding of concepts, processes, principles, and aspects of targeting and related roles and responsibilities. It covers key targeting frameworks including D3A (Decide, Detect, Deliver, and Assess), F3EAD (Find, Fix, Finish, Exploit, Analyze, and Disseminate), and EBO (Effects Based Operations) to guide thought processes on design, planning, execution and assessment to address Desired End State and Commander's Objectives. The course follows the Targeting Cycle including weaponneering, collateral damage, and battle damage assessment. Targeting Professional contains embedded practicums and concludes with a Targeting Strategy Capstone exercise.*

## **SPACE 100 - SPACE OPERATIONAL ENVIRONMENT & SPACE SYSTEMS**

*Space-based operations allow global adversaries to develop and field more lethal and agile military forces by simply leveraging available commercial space resources. This course considers basic orbital mechanics, space and associated terrestrial architecture, and develops a deeper understanding of the military and commercial space environment. Graduates will be able to describe space system requirements; best employment options for available space assets; and weave in ongoing and future commercial and/or military operations and their impact on national objectives.*

## **SPACE 101 - INTRODUCTION TO SPACE OPERATIONS SEMINAR**

*Space is no longer the domain of the most technologically advanced countries; people worldwide rely on services provided by, or dependent upon, space assets. National security interests and objectives require commanders to integrate space capabilities, defense, and expertise across all military operations. This 2-day course is designed to expose military commanders, and the forces they direct, to the considerations of planning and conducting space operations. The course is implemented as an introduction to concepts and lexicon of space operations, which provides students with the requisite familiarization to support more advanced space training requirements. The concepts developed in this course are further explored in our advanced space training curriculum.*

## **SPACE 102 - INTRODUCTION TO SPACE**

*This 8-hour asynchronous, self-paced course raises students' awareness of space by examining the evolution of our understanding and use of space, space as warfighting domain, and trends in the space industry. Graduates will be able to describe the characteristics of space and identify the various orbital regimes employed by spacecraft in operation today, as well as learn about the various space-based missions such as satellite communications, ISR, position navigation and timing, missile warning, and environmental monitoring. Lastly, students gain a deeper appreciation for the capabilities these missions provide and how they impact the operational environment.*

## **SPACE 200 - SPACE SYSTEMS DESIGN**

*Continuous improvements in technology and globalization of services led to the development and proliferation of advanced space systems across commercial, civil, and military sectors. Space capabilities underpin infrastructure and services for commerce, agriculture, humanitarian- and disaster-relief efforts, financial transactions, social networks, and national defense. This course builds upon the principles of orbital mechanics and spacecraft design from Space 100. Graduates of this course will clearly articulate how satellites, payloads, and constellations are designed to provide specific capabilities. Students thoroughly explore scientific concepts behind various space-based asset design, including the use of the Electromagnetic Spectrum in remote sensing, frequency allocation and budgets for satellite communications, and the intricacies of precision navigation and timing. Students will design a payload, spacecraft and its associated systems and sub-systems, and constellation for a specific purpose as well as describe the launch and orbital transfer parameters required to ultimately achieve their design.*

## **SPACE 201 - SPACE RACE 2.0**

*This 8-hour asynchronous expands upon the lessons learned in SP 100 or SP 105 and exposes the student to space-based capabilities available to policymakers and militaries around the globe. Students will be introduced to current and emerging kinetic and non-kinetic space threats, the rapid growth in commercialization of the space industry, and the driving forces behind this phenomenon. Finally, the student will be asked to describe the impact of international policy and the commercialization of space on future military acquisitions and capabilities. Potential students should be chosen for continued evaluation as candidates for progression in space-based operations or other related career fields.*

## **SPACE 300 - ADVERSARY SPACE CAPABILITIES I**

*Adversaries rely on a variety of integrated terrestrial, cyber, and space-based capabilities and equipment to deliver information, communications, and global awareness. The rapidly expanding commercial space industry provides low-cost space capabilities and options for nations and actors across the globe to enter a previously inaccessible domain. This course introduces the student to the who, what, and why regarding China, Russia, and commercial space programs. By examining the national objectives of both countries, their current and developing space-based capabilities, and commercial space endeavors, graduates of this course will have a firm understanding of the challenges and opportunities these doctrinally based capabilities pose to US and allied interests. This course examines Chinese, Russian, and commercial industry space capabilities: This course covers Chinese, Russian, and commercial industry space capabilities: National Objectives, Doctrine, and Organization; Space Lift; Space Domain Awareness; Intelligence, Surveillance and Reconnaissance; Position, Navigation and Timing; Satellite Communications; and Nuclear Detection, Environmental Monitoring, Missile Warning, and Missile Defense.*

## **SPACE 301 - SPACE ELECTRONIC WARFARE**

*“Electronic Warfare” is an asynchronous, self-paced 6-hour course designed to raise students’ awareness of space by examining the evolution of electronic warfare and the use of space, space as warfighting domain, and current trends in the emerging space industry. Graduates of this course will be able to describe the characteristics of space and identify the various electronic warfare tactics and countermeasures employed to deny, degrade, deceive, disrupt, destroy, and protect space systems. Expanding on this knowledge, the students will be given an opportunity to learn about jamming techniques, electronic support techniques, and electronic protection tactics aiding in electronic attack. Additionally, students will gain an understanding of the importance of electronic warfare and its impact on space operations.*

## **SPACE 303 - ANTI-SATELLITE WEAPONS**

*Space 303 is an asynchronous, self-paced 8-hour course designed to raise student awareness of the different types of anti-satellite systems and their effects. Graduates of this course will be able to describe the characteristics of different types of anti-satellite systems and the effects they have on the space environment. Students will also be able to determine where on the Space Threat Continuum, each type of system is represented.*

## **SPACE 310 - ADVERSARY SPACE CAPABILITIES II**

*China and Russia threaten the ability of nations around the world to deter aggression, protect national interests, and fight and win future conflicts. Simultaneously, the rapidly expanding commercial space industry provides low-cost space capabilities & options for nations and actors across the globe to enter a previously inaccessible domain. China and Russia are developing a wide array of counter-space weapons to hinder international access to essential space services and purposefully interfere with the electro-magnetic spectrum. Private industry is developing orbital maintenance and orbital debris removal capabilities which will represent future counterspace threats. This course flows through the Threat Continuum providing required insight to ensure freedom of action in space and, when necessary, defend against threats and deny adversary freedom of action in space.*

## **SPACE 400 - SPACE OPERATIONS PLANNING**

*Space 200 teaches students to integrate space operations into intelligence and multi-domain operations. Graduates will understand the current international legal regime and multi-national space organizations and the constraints both place on space operations. The course describes the fundamentals of space warfare as described in the US Joint Publication 3-14 and students shall be able to determine space operational requirements to protect coalition space assets and their ability to project combat power. Graduates will develop and analyze courses of action and operational requirements for the best employment of available space assets for ongoing and future military operations and communicate their knowledge to military staff and combat commanders.*

## **SPACE 410 - RENDEZVOUS & PROXIMITY OPERATIONS**

*The continued development and employment of dual-use technologies and techniques in space provide opportunities and threats to the continued, and unfettered, use of the space domain for commercial, military, and science users. Our Advanced Rendezvous and Proximity Operations (RPO) Course provides students a higher level of understanding and knowledge of the principles, techniques, constraints, and impacts of RPO from launch to on-orbit maneuvers. We examine the opportunities RPO offers for on-orbit inspection, repair, refuel, debris removal, and other support missions to maximize an increasingly congested domain. Students also think through RPO's impacts to national and international security implications as part of a contested operating environment.*

## **SPACE 430 - SPACE CONTROL**

*"Space Control" is a 7-day course designed to develop students' knowledge of offensive and defensive space control concepts. Graduates of this course will participate in on-line discussions regarding offensive space control operations and how they are used to prevent an adversary's hostile use of space capabilities. Expanding on this knowledge, the students will be given an opportunity to describe how the adversary gains access to space capabilities to deny, degrade, deceive, disrupt, and destroy space capabilities. Additionally, students will also examine, identify, and describe defensive space control operations. These concepts include understanding defensive space operations conducted to preserve the ability to exploit space capabilities via active and passive actions, while protecting friendly space capabilities from attack, interference, or unintentional hazards. Finally, students will be able to recognize the planning considerations when employing offensive and defensive space control capabilities by reviewing employment implications.*

## **SPACE 440 - SPACE ISR**

*This course is for space professionals to develop an advanced understanding of Space Intelligence, Surveillance, and Reconnaissance (ISR) and its applications to civil, commercial and military problems sets. The space domain provides an unparalleled vantage point compared to the land, sea, and air domain. Collection platforms placed in space--the ultimate high ground--have the ability to provide continuous coverage even in the most heavily contested areas of the globe. Space ISR can provide civilian and military decision makers with remote sensing data, signals intelligence, indications and warning, battle damage assessments, force disposition, and characterization of the operating environment. The use of surveillance and reconnaissance satellites has evolved from more of a strategic nature to providing more time-sensitive operational and tactical levels of support. The advantage of conducting reconnaissance and surveillance from space has led to an exponential growth in the number of Space ISR satellites in orbit.*

## **SPACE 460 - INTERNATIONAL SPACE POLICY & STRATEGY**

*Space remains a contested, competitive, congested, costly, and complex domain for international governments and commercial entities alike. We launch into the historical underpinnings of the use of space and step through the origins, evolution, current status, and future prospects of international space policies and strategies. We also examine principles of international space law, norms, and treaties that affect ongoing and future space commerce, exploration, and security.*

## **SPACE 480 - INTELLIGENCE SUPPORT TO SPACE OPERATIONS**

*As the space domain continues to become more congested and contested, understanding the operational environment and key military and civilian players involved in this domain will provide a decisive advantage. Intelligence professionals play an integral role in providing evaluated and analyzed information on competitor space capabilities. Similar to other domains, intelligence is required during the mission planning process, the execution of operations, and the post-operation phase to determine operational and geopolitical effects. Knowing a competitors' capabilities and limitations, force disposition, order of battle and intent can often mean the difference between victory and defeat. Additionally, understanding how environmental factors may impact operations is crucial to effective planning and execution of operations. Intelligence personnel should be relied upon to provide space domain awareness, frequency spectrum usage, intent of international competitors, international force disposition, environmental monitoring, and support to targeting and indications and warning (I&W). In this course, a discussion of processes and products utilized by space intelligence analysts will be discussed and how they are injected into planning and operations. Following a discussion of processes and products, the use of intelligence to support space control operations, both offensive and defensive in nature will be focused on. Lastly, this course will end with a discussion of environmental monitoring followed by the intelligence community and the roles and responsibilities of agencies/organizations that support the space domain.*

## **SPACE 900 - THE SPACE DOMAIN: NATIONAL SECURITY EXECUTIVE SEMINAR**

*Space 900 provides a foundation in space grand strategy to introduce students to space policy and published guidance that shapes strategic initiatives as nation states, allies and partners in space. Space 900 provides an overview of the space environment across all orbital regimes and introduces space capabilities to familiarize students with current examples across military, commercial, allied and civil space. This course provides a stark reality-check on our space vulnerabilities through a review of current adversary counter space capabilities and threat systems that provide a variety of critical services to all nations. We use a series of practical real-world vignettes and examples, to engage the student with situations where space capabilities and space mission areas are applied in support of multi-domain operations. Our discussions and exercises illustrate space interoperability, synchronization, support, and effects across the spectrum of operations. Finally, Space 900 incorporates multiple senior leader perspectives, ranging from the Department of Defense, allied/partner leaders, as well as leaders from commercial space industry. Space 900 offers the unique opportunity to have face-to-face dialogues with space enterprise leaders to enrich your experience and learning with seasoned perspective to achieve a greater awareness of the space environment, threats, and capabilities.*

## **COURSES COMING SOON!**

### **SPACE 103 - MATH FOR SPACE**

### **SPACE 202 - ADVANCED ORBITAL MECHANICS**

### **SPACE 203 - JOINT PLANNING PROCESS**

### **SPACE 204 - SPACE SURVEILLANCE NETWORK & SPACE OBJECT SURVEILLANCE AND IDENTIFICATION**

### **SPACE 302 - CYBERSPACE**

### **SPACE 304 - INTERFERENCE DETECTION, ATTRIBUTION, AND GEOLOCATION**

### **SPACE 420 - SPACE DOMAIN AWARENESS**

### **SPACE 450 - SPACE BATTLE MANAGEMENT**

### **SPACE 470 - SPACE ACQUISITIONS**