PROPONENT-SPONSORED ENGINEER CORPS TRAINING (PROSPECT)

Course Catalog

Fiscal Year 2023

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1391 Preparation

Control Number: **253** Length: 36 Hours

Purpose.
Students will learn MILCON programming policies and procedures that include: (a) Headquarters, Department of the Army (HQDA)/Headquarters, US Army Corps of Engineers (HQUSACE) military construction policies; (b) program development cycles; (c) various MILCON appropriations and programs with a focus on Military Construction, Army (MCA); (d) program formulation and approval; (e) various Army level reviews such as Installation Management Command (IMCOM) Headquarters and Regions /Army Commands (ACOM)/ Army Service Component Commands (ASCC)/Direct Report Units (DRU)/HQUSACE/Major Subordinate Commands (MSC)/US Army Information Systems Engineering Command (USAISEC)/HQDA review, project approval process; and (f) how to develop and market a project.

This course includes an overview of the automated applications supporting military construction processes.

Description.
This course provides a logical framework for preparing the DD Form 1391, "Military Construction Project Data". It provides students a working knowledge of how to verify requirements, and prepare the documentation package to request Congressional approval for military construction (MILCON) project(s).

Topics include: (a) identify, define, verify, and justify project requirement; (b) define courses of action; (c) research and apply criteria and standards; and participate in practical exercises (case study). Prepare DD Form 1391 and related documentation to include: (1) detailed justification; (2) supplemental data (e.g., economic analysis, cost estimate, and site considerations); and (3) project summary.

Prerequisites.
This course is recommended for personnel at all levels (installation, IMCOM Directorate, ACOM/ASCC/DRU, USACE district, USACE division, HQUSACE, HQIMCOM, HQDA, Office of the Secretary of Defense (OSD)) who prepare, review, certify, approve, and use DD Forms 1391; (b) Occupational series: 0301, 0800, 0020, and other personnel involved in DD Form 1391 process; (c) Grade: GS-05 and above. Nominees should have 6 months "on-the-job" training prior to attending. Other recommended attendees include personnel from other services, defense agencies and the private sector who are involved in DD Form 1391 preparation, planning and design charrette processes.

1391 Processor

Control Number: **252** Length: 24 Hours

Purpose.
The DD Form 1391 Processor System, which is available in a web-enabled environment, is the means for documenting and submitting military construction project requirements and justification data for funding requests to Congress. Through lectures and practical exercise sessions, this course introduces the student to the capabilities, formats, functions, and usage procedures of the DD Form 1391 Processor System. The DD Form 1391 Processor System allows the user to prepare, edit, query, submit, review, and distribute DD Forms and supporting DD Form 1391 documents electronically using a personal computer.

Description.
Topics covered include creating, submitting, reviewing, and editing individual DD Forms 1391 as well as creating directories and custom reports. The custom reporting and directory features can assist an organization in managing its military construction program. All features of the system are covered.

Prerequisites.
Nominees must be assigned current positions at Army installation, Region, MACOM, USACE district, USACE division, HQUSACE, HQ, IMA, or HQDA who are involved in preparing and/or reviewing the DD Form 1391 and related documentation associated with the military construction planning, programming, and budgeting process. (Note: Although this course is focused on Army policy, employees of other Services are welcome to attend for information purposes.)

Advanced 1D/2D Modeling with HEC-RAS

Control Number: **352** Length: 36 Hours

Purpose.
This is an advanced course in applying computer program HEC-RAS. The course provides participants with the knowledge to effectively use computer program HEC-RAS to analyze difficult hydraulic conditions in natural and constructed channels, utilizing one-dimensional and two-dimensional modeling techniques.

Description.
Topics include: Developing terrain models for 2D modeling; Creating a 2D computational grid; Boundary conditions for 2D Flow Areas; Hooking up 1D elements to 2D Flow Areas; Running a combined 1D/2D model; Viewing 1D/2D results with RAS Mapper; and Debugging 2D model computations.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0800 and 1300; (b) Grade: GS-7 or above. Students must be experienced engineers who have attended Steady Flow with HEC-RAS (Crs. No. 114), and have also either attended Unsteady Flow Modeling with HEC-RAS (Crs. No. 188) or have experience applying HEC-RAS using the Unsteady Flow modeling components. Participants must be in positions where they are currently engaged in using HEC-RAS in hydraulic investigations.

ADVANCED APPLICATIONS OF HEC-HMS

Control Number: **369** Length: 36 Hours

Purpose.
This course provides advanced instruction in the use of the Corps' Hydrologic Modeling System (HEC-HMS) for ecosystem restoration, flood damage reduction, forecasting, and navigation studies where advanced simulation strategies are required. Workshops are used to provide hands-on reinforcement of scientific and engineering principles presented in lecture. Students will be prepared to work on more complicated studies after completing the course.

Description.
The course covers a variety of areas that go beyond the Basic HEC-HMS course which focuses on event-based flood hydrology. This course starts with a module on continuous simulation, including the details of modeling water content in the soil, evaporation and transpiration, and parameter estimation from soil databases. It continues with a module on interior drainage exploring both event and continuous analysis techniques. The next module covers snow processes and snowmelt modeling, with particular attention paid to proper calibration techniques when using snow data. A module is included for surface erosion and wash-off, channel sediment transport, and sediment settling in reservoirs. The last module provides approaches to dealing with hydraulic complications in channel routing.

Prerequisites.
Nominees must have a working knowledge of hydrologic processes and how they are represented in HEC-HMS. Students should have taken Course 178, Hydrologic Modeling with HEC-HMS, or have equivalent work experience. Basic HEC-HMS navigation skills will not be taught in this class. Nominees must be assigned (a) Occupational Series: Selected 0800 and 1300; (b) Grade: GS-09 or above.

Advanced Scheduling for Projects

Control Number: **543** Length: 32 Hours

Purpose.
This course will address specific training needs of the Corps of Engineers to better develop and prepare schedules for major USACE projects.

Description.
The Advanced Scheduling for Projects course will demonstrate advanced scheduling techniques, provide hands on topics and techniques that are relevant to Project Managers, Program Managers, Analysts, Resource Providers, Construction Project Engineers, Construction Admin/Office Engineers and Resident Engineers. The course will expand on project analysis tools and methods taught by prior courses.

Prerequisites.
Project or Program Managers (GS12 to 15), Program/Budget Analysts (GS9 to 13), Schedulers (GS11 to GS14), Resource Providers (GS12 to 14) and Project Engineers/Resident Engineers/Contract Admin. (GS11 to GS14).

Note: Course attendees are required to have two years of Primavera or P2 scheduling experience and PROSPECT #143 or #080. Waivers to these requirements may be requested from the course proponent.

Advanced Streambank Protection

Control Number: **394** Length: 36 Hours
CEUs: 3.2 PDHs: 32

Purpose.
This course provides guidance on system-wide watershed rehabilitation by introducing advanced concepts in fluvial geomorphology and channel dynamics, along with engineering methods for conducting background assessments and field data investigations, selecting and siting structures, evaluating channel stability, and producing stable channel designs.

Description.
The Mississippi Delta Headwaters Project (MDHP), formerly the Demonstration Erosion Control Project, was initiated to address problems related with watershed erosion, sedimentation, flooding, and environmental degradation. The project activities encompass 16 watersheds, ranging in size from 0.5 to 600 miles2 (mi2) in the Yazoo River Basin of northwest Mississippi. The MDHP revolutionized the systems approach to addressing channel stability issues by considering an entire watershed, rather than only local characteristics and problems. A systems approach is critical when identifying and addressing interconnected problems within a watershed. This approach provides a process-based framework to define watershed dynamics and to develop comprehensive solutions, with widespread applicability in various fluvial environments. The Advanced Streambank Protection course incorporates classroom and streamside lectures within the MDHP area, providing a unique learning environment. The MDHP covers 2630 mi2, making it one of the nation's largest watershed rehabilitation projects. The analysis tools and structural techniques developed here have been used in all parts of the country.

Utilizing a group of nationally recognized instructors, students will participate in a series of half- and full-day field trips to investigate a wide array of stream types within a 50 mile radius of Grenada, Mississippi. Classroom lectures will cover state-of-the-industry protection techniques, watershed dynamics (sediment and hydraulic), and prediction methods in watershed management (i.e., Sediment Impact Analysis Methods (SIAM)). Over 25 streamside interactive mini-lectures will be conducted with subjects including: identifying dominant hydraulic, geotechnical, and morphological processes; bed gradation sampling methods; analysis of riparian vegetation and hydraulic impacts; and the role of vegetation in bank protection. The long-term performance (hydraulic, geotechnical, and environmental) and effectiveness of several grade control and streambank protection projects will be analyzed. Some projects are over 30 years old. Some

failed sites will be reviewed. Repair or redesign and replacement of these projects will be discussed. Using advanced geomorphic analysis techniques, several severe bank erosion and bed degradation sites will be reviewed from both a local and system-wide perspective. For these sites, project goals will be formulated and conceptual designs developed. In-class discussion will focus on further review of completed projects, failures, and erosion problems studied during the field trips. Students are encouraged to give a brief presentation of a current project for group discussion and review.

Prerequisites.
It is recommended (but not required) that the student first complete the Streambank Erosion and Protection course (#285). The target audience for this course is employees in (a) Occupational Series: 0000-0100, 0400, 0800, 1300, and (b) Grade GS-07 or above, but the course is open to employees in any grade or occupational series.

Application of Engineering Geology

Control Number: **251** Length: 36 Hours

Purpose.
This course presents various applications of engineering geology, including rock mechanics, geologic aspects of various foundations, and remediation techniques. The course is recommended for design geologists and engineers, as well as field geologists and engineers.

Description.
Lectures and lab demonstrations will cover: Basic Rock Mechanics (including field investigations, laboratory techniques, and design applications); Geological Considerations of Soils (including formation and laboratory techniques); Rock Excavation (including blasting and mechanical methods); Foundation Treatment (including gravity structure stability and uplift as well as grouting and cutoff wall remediation); Rock Reinforcement (including slope stability, rock bolts, and rock anchors); Geological Considerations of Dam and Levee Safety (including risk informed analysis, instrumentation, and remediation). This class includes a one day laboratory visit where Rock Mechanics, Soil Mechanics, and Drilling Techniques will be demonstrated.

Prerequisites.
Nominees should be assigned: Occupational Series: Selected 0800, 0810, 1310, and 1350; Grade: GS-07 or above and project management personnel.

Architect-Engineer Contracting

Control Number: **4** Length: 36 Hours
CEUs: 3.1 PDHs: 31 LUs: 31 ACE: 3.0

Purpose.
The course objective is to provide a concentrated look and experience with all aspects of A-E contracting, including acquisition planning, public announcement, selection, pre-proposal activities, negotiations, contract award, administration and closeout.

Description.
Upon completion of this course, the student will be able to identify the principal requirement of the Brooks Act and Define A-E Services. Identify major considerations and methods for acquisition of A-E services and the primary types of A-E contracts used as well as when they are appropriate; Identify requirements to publicly announce an A-E Contract. Analyze the criteria to determine the appropriate firm's requirements to be written into the announcement. Identify the purpose and general content of the SF 330. Identify steps, considerations, and governance of an A-E Selection Board. Identify the principle activities of the pre-proposal phase of an A-E contract (Project Specific Firm Fixed Price, Indefinite Delivery Contract, and Task Order). Identify information required to prepare an Independent Government Estimate; Identify the main items of an A-E firm's price proposal and the Negotiation Preparation Process; Identify the process of negotiating contracts; Identify elements and process of an A-E contract award. Identify primary A-E contract clauses and Administration Requirements. Identify the role, responsibilities, and tasks for technical management of an A-E contract.

Prerequisites.
Nominees must be assigned to occupational series: selected 0340, 0800, 0900, and 1100: GS-11 and above. Lower grade employees are eligible only if their current duties are directly related to A-E contracting. Employees with current or pending assignments which entail selection, negotiation of and/or administration of A-E contracts are eligible. Nominees must not have attended similar courses within the past 3 years. Attendees, a laptop computer with EXCEL software.

Architectural Hardware-Quality Verification

Control Number: **3** Length: 36 Hours

Purpose.
This course develops new skills oriented to the quality verification of architectural hardware used in building construction and updates the student's knowledge of current industry practices and changes in specifications. It also provides training that results in a more effective quality assurance. This course is identified as a requirement by the Architectural Community of Practice.

Description.
This course presents the fundamentals of the industry including hardware materials and finishes-their purpose, use, and application; basic information covering all architectural hardware products, terminology, and types of doors and frames; and the fundamentals of hardware schedules, preparation, and use. Emphasis is placed on how to interpret a hardware schedule for installation purposes and field use, as well as an analysis of a hardware schedule submitted to the designer for approval.

Prerequisites.
Nominees must be assigned (a) Grade: GS-05 or above; (b) current or projected assignment with responsibility for providing quality verification of hardware, specifying hardware, or reviewing hardware submittals from contractors for approval. Student must not have attended this or a similar course within the past 5 years.

Basics of Coastal Processes for Engineers and Planners

Control Number: **11** Length: 36 Hours
CEUs: 2.8 PDHs: 28

Purpose.
This course provides a formal introduction to the technical and management issues important to coastal studies and projects. The course addresses the foundation areas for effectively understanding and working on projects in the coastal zone and is divided into five areas addressing physical setting/location (geology and geomorphology), forcing factors (weather, tides, waves, storm surge), coastal processes (hydrodynamics and sediment transport), coastal problems and solutions, and special planning considerations (sea-level change, regional sediment management, dredging, etc.) The problems, the approach to addressing the problems, and the solutions presented in the class are particularly applicable to the Corps of Engineers' planning and environmental management missions but would be useful to project managers, planners, engineers, scientists, regulatory specialists, attorneys, and members of public stakeholder groups involved with studies and projects in the coastal zone.

Description.
Major topics to be covered include: coastal geology and geomorphology, hydrodynamics, littoral sediment transport processes, sediment budgets, coastal problem identification and analysis of alternative solutions, impact prediction and monitoring, coastal data collection, and the basic issues of coastal project planning and design. Unique coastal settings (including lake shores), regional management, stewardship and mitigative practices will be emphasized. The mission and authorities of the Corps of Engineers, particularly as they relate to other Federal agencies and state coastal zone management, will be explored.

Attendees will be introduced to the "Coastal Engineering Manual" (CEM) as a basic reference, as well as journal publications and other publications useful for a better understanding of coastal zone issues. Common computer tools used in coastal engineering will be described but will not be taught as part of this course. Issues and principles will be illustrated through the instructors' examples, case studies, and a field trip to select sites on the North Carolina Outer Banks. The training site is the USACE Coastal Field Research Facility (FRF), and elements of the course are designed to take advantage of this venue.

Prerequisites.
Nominees should be assigned as engineers, geologists, physical scientists, environmentalists, biologists, planners, project managers, regulatory specialists, or

attorneys who have review, planning, or design responsibilities for coastal shore protection, navigation, and environmental projects. Grade: GS-07 or above.

BIM For Managers

Control Number: **51** Length: 20 Hours

CEUs: 1.4 PDHs: 13

Purpose.

This course is primarily intended to introduce project, construction, and facility managers to Building Information Modeling (BIM). BIM is a project life-cycle system that results in a virtual information model passed from the design team, to the contractor, to the owner or facility manager. While this is not a "How to use BIM software course", participants will learn what to expect when BIM processes are used on their projects. Knowledge gained in this course will allow students to understand the steps taken to complete a BIM project and how their collaboration with the team members early on in the conceptual/design stages of the model can add significant value to the project.

Description.

This course provides an overview of the impact of BIM on managers and addresses their roles and responsibilities in dealing with BIM requirements and deliverables. BIM's strength lies in its ability to identify project conflicts upfront, which in turn eliminates cost prohibitive changes required later on in the construction process. Class will facilitate discussions to identify relevant, standard BIM data requirements and the respective workflows during each phase of the project life cycle. BIM is an evolving process that results in a much better project because you have team members collaborating from the project outset and have the ability to understand how changes at each project phase might impact the end result.

Prerequisites.

Project Managers, Construction Managers, and Facility Managers (GS-09 – GS-14), Series 0800 and 1640.

BOAT OPERATOR LICENSE EXAMINER

Control Number: **172** Length: 40 Hours

Purpose.

This course trains, tests, and licenses individuals as motor boat license examiners for the Corps of Engineers.

Description.

Lectures, demonstrations, group assignments, and practical exercises cover the areas listed below and enable students to perform duties as outlined in Engineer Regulation 385-1-91 and be in compliance with EM 385-1-1 Safety and Health Requirements Manual. Specific areas to be covered include (a) USACE Boat Licensing Policy: (b) equipment requirements and equipment maintenance: (c) boat orientation and boat maintenance: (1) getting underway (2) checking equipment (3) starting procedures and (4) refueling procedures: (d) trailers and trailer maintenance (e) marlinspike seamanship (f) aids to navigation (g) rules of the road (h) fire suppression (i) course familiarization (j) emergency procedures: (1) rescue sequence (2) self rescue techniques (3) man overboard rescues: (k) boat operation: (l) practical course maneuvering exercises: (1) serpentine course (2) transition serpentine (3) avoidance course (4) docking (5) trailering (6) launching and retrieving (7) alongside maneuvering (8) towing and (9) anchoring procedures.

Prerequisites.

Individuals attending this course must show proof of completion of a U.S. Coast Guard or National Association of State Boating Law Administrators (NASBLA) training course for the state in which they are operating and be: (a) currently licensed as Corps of Engineers Class A and Class I boat operators (b) able to swim in a Personal Flotation Device (PFD) for 100 yards (c) an experienced motor boat operator and (d) designated to train local motor boat operators in boating skills.

Budget Training

Control Number: **254** Length: 32 Hours
CEUs: 3.3

Purpose.
This course is targeted for those civilian and military employees of the Corps of Engineers who work directly within the financial management arena. It provides a framework and knowledge of the federal budget process with specialized emphasis on policies and procedures of the Corps of Engineers. The objective is to provide a uniform understanding of Corps budgeting so that operations are improved/streamlined at all Corps organizational levels.

Description.
The course describes program and budget activities at the HQUSACE, MSC, District, FOA, and Laboratory levels, and how these activities interrelate with those at Army, DOD, OMB, and the Congress. The curriculum is structured around the formulation and execution of an activity's operating budget. The material is presented through lectures and practical exercises covering various budgeting processes and budget-related issues. Major topics/areas include command operating budgets; Corps of Engineers funding sources to include military, civil and reimbursable programs; military and civil works budgeting; budget execution; statutory and administrative limitations; mobilization; and Corps of Engineers revolving fund.

Prerequisites.
Restricted to full time Corps members in the Grade of GS-11,(03)and higher in all professional fields who have significant financial management responsibilities in their commands. The target Corps members are individuals in the CP-11 career field. Priority enrollment to this course will be afforded to the CP-11 careerist. Waivers will only be considered for CP-11 personnel below the GS-11 level and those must be approved by the student's local Chief of Resource Management prior to requesting a space allocation. Other professional series below the GS-11 will not be considered.

Building Air Barriers and Pressure Testing

Control Number: **126** Length: 32 Hours
CEUs: 2.7 LUs: 27

Purpose.
Make your building tighter and healthier for its inhabitants and more energy efficient for the owner. Learn how correctly define and design a tight building envelope to have decreased air infiltration. Learn how to be an effective and involved witness for building envelope pressure tests. Know how to determine if your building's air leakage rate meets its goal.
Unified Facilities Criteria (UFC) 3-101-01 Architecture, and related guide specifications, define the Army, Navy, and Air Force requirements to install continuous air barriers and to perform pressure testing to determine overall air leakage in all new and major retrofit construction projects. This class provides architects, engineers, and construction QA personnel with the knowledge and skills necessary to design, construct, and test effective continuous air barriers on military facilities. Witness actual building pressure tests on a completed facility to understand how design and construction affects overall building air leakage rates and attain good test results.

Description.
Through lecture, field pressure and diagnostic testing, this course presents the following building air barrier and testing related topics: design and construction of building air barriers including related materials, components, and systems; effect of air barriers on indoor air quality; USACE Air Leakage Test Protocol including pressure and diagnostic testing equipment and thermography. Hear from Industry experts who will present information on equipment and material systems available to make your project a success.

Prerequisites.
Nominees should be assigned (a) Occupational Series: 0800; (b) Grade: GS-05 through GS-14, or equivalent; (c) current or projected position as an architect, engineer, engineering technician, construction representative, resident engineer, or project manager.

CE CONTRACT LAW

Control Number: **342** Length: 36 Hours
CEUs: 2.8 PDHs: 28

Purpose.
This course is primarily intended to instruct USACE attorneys in the basic legal principles and procedures related to Corps of Engineers construction contracting. Attendees will be able to provide competent legal advice on contractual matters such as formation and administration issues and to process contract actions such as bid protests, mistakes-in-bid, and claims and appeals.

Description.
Through the use of lectures, workshops, and case study sessions, this course primarily addresses those aspects of construction contract law essential to successfully accomplishing the Corps' contract mission. This course is designed for training Corps of Engineers Attorneys, Acquisition personnel, and Project Managers.

Prerequisites.
Nominees must be assigned (a) Occupational series: 905, 1102, or 340; (b) Grade: GS-09 or above; (c) Other: This course is recommended for attendees that have had basic government procurement law training.

CERCLA/RCRA PROCESS

Control Number: **356** Length: 24 Hours
CEUs: 2.1 PDHs: 21

Purpose.
This course trains personnel on the Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA) hazardous substance response process and the Resource Conservation and Recovery Act (RCRA) corrective action process as it relates to the Department of Defense. It addresses the Defense Environmental Restoration Program which includes the Installation Restoration Program (IRP), the Base Realignment and Closure (BRAC) Program, and the Formerly Used Defense Sites (FUDS) Program. It also has applicability to cleanups conducted under the Formerly Used Sites Remedial Action Program (FUSRAP), the EPA Superfund program, and cleanups at Army Corps of Engineers Civil Works facilities. This is an ISEERB approved course.

Description.
This course has been developed by in-house USACE staff and focuses on the regulatory requirements for cleaning up hazardous substances, pollutants, and contaminants under CERCLA and solid and/or hazardous wastes at RCRA sites. This course covers the CERCLA process as outlined by Subpart E of the National Contingency Plan and the RCRA corrective action process as implemented via EPA guidance, RCRA permit requirements, and consent orders. CERCLA topics addressed include preliminary assessments, site inspections, removal site evaluations, engineering evaluations/cost analyses, removal actions, remedial investigations, feasibility studies, proposed plans, records of decision (ROD), pre and post-ROD changes, remedial design and construction, and public participation requirements. RCRA topics include the initiation of the RCRA corrective action process via permit conditions and consent orders, the RCRA Facility Assessment, RCRA Facility Investigations, Interim Stabilization Measures, Corrective Measures Studies, and Corrective Measures Implementation. In addition to the RCRA course, individual two-day workshops on the CERCLA or RCRA process can be tailored to meet your site specific training needs. Whether you are interested in an onsite CERCLA/RCRA process course or a separate course featuring either the CERCLA or the RCRA process, contact the USACE Learning Center, Huntsville, AL.

Prerequisites.
Nominees must have at least one year of environmental experience. Priority will be given to personnel directly involved in environmental restoration. The target audience for this course includes the following occupational series: 800 series Engineers (0801, 0819,

0830, 0893, 0896, etc); Environmental Protection Specialist (0028); Program Managers, Engineering and Science (0340); Industrial Hygienists (0690); Geologists/Hydrologist (1350, 1315); and Chemists (1320).

Civil Design for Planning

Control Number: **218** Length: 36 Hours

CEUs: 3.0 PDHs: 30 LUs: 30

Purpose.

This course focuses on the proprietary Corps of Engineers (USACE) Civil Works project development process. It provides a general understanding of the broad-range of engineering studies and sensitive engineering issues that impact and influence project formulation, the feasibility planning phase (including the SMART Planning processes), as well as the pre-construction engineering and design (PED) phase. The course also covers the processes involved in accomplishing studies (e.g. Civil Works Review Process, quality control, value engineering), and tools (mapping, risk based analysis, Project Management Plans, etc.). It discusses the role of the designer, planner, and project manager in the context of the Project Delivery Team. It is intended to reach newly assigned professional scientists/engineers within the engineering, planning, and project management functions of the Corps, or those who are new to the Civil Works process. The class can also provide an excellent refresher and update for staff currently working in the program. Individuals not working with, or planning to work with, the USACE Civil Works process may receive less benefit from this class.

Description.

The objective of this course is to develop knowledge, skills, and aptitudes regarding the policies, procedures, tools, and techniques for the execution (planning and design) of a USACE Civil Works project. After completing this course, the student should be able to more effectively execute and coordinate a multi-disciplinary USACE Civil Works project. Topics include organization and development of resources required to execute the process, policy guidance, and various sensitive design concerns within the project planning process (including engineering overview, geotechnical, electrical/mechanical, hydrology and hydraulics, risk-based analysis, value engineering, structural engineering studies, and geographic information systems). Emphasis is placed on navigating the review process and the SMART Planning Process. This course tracks the Corps of Engineers Project Management Business Process from the authorization of the first study to the completion of construction. The course was developed for USACE Civil Works personnel and may be of reduced value to personnel from other agencies. Students completing the class may receive 3.0 CEU (Continuing Education Units), or 30 LU (Learning Units), or 30 PDH (Professional Development Hours).

Prerequisites.
Nominees should be on, or have a potential assignment to a Civil Works study team in the Planning or Engineering phases and have functional responsibilities within the Planning, Engineering, Construction, Operations, Real Estate, Counsel, or Project Management organizations. (a) Occupational Series: All series; and (b) Grade: GS-07 through GS-13. Individuals not working with, or planning to work with, the USACE Civil Works process may receive less benefit from this class.

CIVIL WORKS COST ENGINEERING

Control Number: **24** Length: 36 Hours
CEUs: 3.2 PDHs: 32 LUs: 32

Purpose.
This course is needed due to the demand for training Cost Engineers so they are knowledgeable in the Civil Works (CW) field. Currently there are a large number of cost engineers in the CoE that do not have the intermediate and advanced civil works cost engineering skills and knowledge to adequately perform their job duties. Estimating civil works projects is a specialized field, whereby correct and accurate estimating is needed in order to support and to successfully complete projects. Also an audit of the CoE concluded that the Corps needs to provide more training in the Civil Works field.

Description.
The topics covered include the regulations pertaining to Civil Works Cost Engineering, Cost Engineering throughout the Civil Works SMART Planning Process, Cost Quality Management, and the role of the Cost Engineer on the project delivery team throughout the project delivery process. The requirements for performing Cost and Schedule Risk analysis and development of contingencies for CW projects will be explained. Advanced methodology for quantity takeoff and review of plans and specifications will be taught. The course will include discussions and examples of real life civil works cost estimating and conditions effecting production rates, bidding strategies, acquiring transportation and placement of materials. Requirements for Agency Technical Review will be discussed. Students are expected to bring and be able to use MII Cost Engineering software to complete the course problem.

Prerequisites.
The employees that should attend this class include Cost Engineers at the District and Division level currently working on Civil Works Projects. Occupational Series: 0800; 0802; 0807; 0808; 0810; 0830; 0850; 1301; 1350; grades: GS-07 and above. The people attending this class should be currently assigned to a Cost Engineering organization or working in the Civil Works field. This course is designed for the intermediate to advanced cost engineer that works on Civil Works projects during their work duty/responsibility. Potential candidates with less than five years' experience in preparing cost estimates or grade GS-5 are eligible if recommended by their supervisor.
It is strongly suggested that potential students have taken the Cost Estimating Basics and MII Basic PROSPECT classes.

CIVIL WORKS PROGRAMMING PROCESS

Control Number: **358** Length: 36 Hours
CEUs: 3.1 PDHs: 31

Purpose.
This course is designed primarily for program/project/study managers, program analysts, and the project delivery team. It provides a comprehensive understanding of Civil Works activities, programming and management concepts, and their interrelationship with mission accomplishments.

Description.
The course includes practical exercises and discussions of: (1) the U.S. Army Corps of Engineers (USACE), the Administration, Congress, and actions relative to Civil Works studies and projects, authorizations, and appropriations; (2) program development and formulation at the District and the Division level, including new starts, continuing programs, and capabilities; (3) discussion of study/project cost estimates, schedules, justification documents, and related program management documents; (4) program defense including District and Division support for USACE/Assistant Secretary of the Army for Civil Works Congressional hearings; (5) study/project and program execution, including work allowances, reprogramming actions, and related documents.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Any job series within career program 11 (comptroller), career program 51 (general administration and management), and career program 18 (engineers and scientists); (b) Grade: GS-09 and above - below GS-09 individuals are eligible if recommended by their supervisors. Student must have a minimum of one-year USACE Civil Works experience. Student should have taken some other USACE overview course prior to # 358 and one should complete # 358 prior to course # 10 with HQ.

Coastal Ecology

Control Number: **263** Length: 36 Hours
CEUs: 2.6

Purpose.
This course provides Corps of Engineers personnel with state-of-the-art knowledge and technology in marine and coastal ecology. Students are given an overview of the latest scientific and analytical techniques in the field of coast ecology and related sciences.

Description.
Through a series of lectures, practical field exercises, and field trips, students are introduced to the basic concepts of marine/estuarine ecology (including benthic ecosystems, fisheries, coastal marsh and seagrass ecology), sensitive resources, experimental design, and current marine ecological techniques. The role and importance of coastal ecosystems will be discussed. Temperate, subtropical, and tropical ecosystems will be covered for the Gulf, Atlantic, and Pacific coasts. Students should bring appropriate clothing/gear (e.g. boots, sunscreen, etc.) to participate in the field component of the course.

Prerequisites.
Nominees must be assigned: (a) Occupational series: 0020, 0400s, 0800s, and 1300s; (b) Grade: GS-09 and above; and (c) This course is meant primarily for engineers, scientists, and technicians with planning, operations, or regulatory duty assignments involving marine and coastal systems.

Coastal Engineering Projects and Design

Control Number: **13** Length: 40 Hours
CEUs: 2.7 PDHs: 27

Purpose.
This course provides formal and hands-on training in the fundamental processes, and functional and structural design elements required to work on coastal engineering projects. The emphasis is on learning and applying the basics of shore protection and navigation structure planning, design, rehabilitation, and maintenance. Attendees are introduced to coastal project and element alternatives, functions, and design procedures for structural and non-structural solutions. This course is intended primarily for planning, engineering, and construction or operations personnel needing state-of-the-art procedures and techniques for working on coastal projects. Course content will emphasize up-to-date technology and analysis tools specific to the needs of both newly assigned and experienced practicing coastal engineers.

Description.
Basic scientific principles and computational procedures presented in the Coastal Engineering Manual (CEM) will serve as the formal instruction foundation. Attendees will become familiar with the use of the CEM and other numerical computational tools and models, physical models, and field data collection through lectures, case studies, and classroom exercises. Access to and use of USACE and other coastal processes and map databases will be discussed. These materials will be illustrated by instructors' examples. Attendees will become familiar with (1) coastal project development and structure design including navigation breakwaters and jetties, shore-connected and detached breakwaters, groins, seawalls and revetments, and (2) the planning and design of beachfills, offshore berms, physical aspects of coastal wetland restoration dredging and material disposal management, and channel design. Attendees will learn the functional and structural design characteristics of different types of coastal structures and how to evaluate non-structural alternatives. Topics discussed are (1) coastal hydrodynamics (waves, currents, and water levels); (2) coastal geology and sediment transport; (3) wave-structure interaction (i.e., wave runup, overtopping, reflection and transmission); (4) design and use of coastal armoring; (5) design of beach fills; (6) design of navigation structures; and (7) computational tools.

Prerequisites.
This class is intended for engineers or scientists who have been assigned to coastal projects and who need in-depth knowledge of coastal planning, project design, and operational practices. Attendees should have some experience or background in coastal processes having taken either the PROSPECT Coastal Planning course (#11) or an equivalent university level coastal course. Grade: GS-09 or above.

Concrete Fundamentals

Control Number: **21** Length: 36 Hours
CEUs: 2.4

Purpose.
This course provides the participant with the specific fundamental knowledge of materials, techniques, and procedures for quality concrete construction.

Description.
Through lectures and demonstrations, this course covers concrete fundamentals such as materials, sampling, testing, handling, mixing, placing, consolidating, finishing, curing, and other miscellaneous items.

Prerequisites.
None

Concrete Maintenance and Repair

Control Number: **257** Length: 36 Hours
PDHs: 33

Purpose.
This course provides the participant with specific knowledge of materials, techniques, and procedures for evaluation, repair, and maintenance of concrete.

Description.
Through lecture and demonstration sessions, the student will be able to identify the causes of distress, determine extent of failure, list advantages and disadvantages of making repairs, and recommend methods of repair with concrete, mortars, resins, surface coatings, and joint sealants. This course does not cover repair or maintenance of concrete pavements.

Prerequisites.
None

CONSTRUCTION CONTRACT ADMINISTRATION

Control Number: **366** Length: 36 Hours
CEUs: 3.1 PDHs: 31 LUs: 31 ACE: 3.0

Purpose.
The course objective is to provide students with the fundamentals of the Department of Defense (DoD) acquisition process as it relates to administration of fixed-price construction contracts. The primary focus of the course is post-award contract administration, but the course includes pre-award coordination and review for field-level personnel. As an introductory course, it also serves as a developmental link between the members of the Project Delivery Team through the project life cycle.

Description.
Upon completion of this course, the student will be able to identify the authorities and responsibilities of the contracting organization; recognize the statutory and regulatory requirements to ensure competition, proper contract type, and acquisition planning; identify the requirements for pre-award planning to construction contracts; identify the roles, responsibilities, and authorities of the project management team; interpret the requirements of Labor Standards law to construction contracts; interpret the rules of contract contained in the specification clause; identify the purpose of the contractor's accident prevention plan; explain construction management policies as it pertains to quality control and quality assurance; identify the basic concepts of price, cost, technical, profit, and analysis; identify the process for preparing for and holding negotiations; identify the requirements to process construction progress payment; define the policy and requirements for contract completion and closeout; and identify conditions for contract termination and the conditions of the dispute clause.

Prerequisites.
Nominees must be assigned to occupational series: selected 0340, 0800, 0905, 1100, 1102: GS-05 and above. Experience: 0-3 years in the construction function and actively engaged in the field administration of fixed-price construction contracts. Nominees should possess a knowledge of the post- award construction contract process. This course is also for those in other series actively and directly involved in the construction contract process.

CONSTRUCTION QUALITY MANAGEMENT - GOVERNMENT EMPLOYEES

Control Number: **29** Length: 8 Hours
CEUs: 0.5 PDHs: 5

Purpose.
This course is an introduction to the Construction Quality Management System as practiced in the Corps of Engineers.

Description.
After completing this course, the student will understand the objective of construction quality management related to establishing quality requirements, controlling quality during construction, and taking necessary measures to ensure quality. This training program satisfies requirements for Construction Quality Management for Government Employees and will not require recertification annually.

Prerequisites.
Nominees must be assigned (a) Occupational series: 0800; (b) Grade: GS-05 or above; (c) Other: Students should have a current or projected assignment as a member of the resident or area engineer's staff whose day-to-day function entails construction contract surveillance and contract administration. Specification writers and designers who establish the quality to be incorporated in the contract documents are eligible for attendance.

CONSTRUCTION SCHEDULE PERFORMANCE MANAGEMENT

Control Number: **80** Length: 32 Hours
CEUs: 2.1 PDHs: 21 LUs: 21 ACE: 2.0

Purpose.
The course objective of this course is to enforce contract clauses and technical provisions with respect to project schedules. USACE manages thousands of construction projects which requires contractors to manage schedule performance using sophisticated network scheduling techniques. In this context, it is paramount USACE construction agents perform effective professional schedule performance management consistent with contract requirements and industry best practices using Oracle's Primavera P6 Enterprise Project Portfolio Management software. This course is recommended for the construction management team in schedule performance management.

Description.
Upon completion of the course, the student will be able to identify the FAR Clauses that affect schedule management; identify the requirements of UFGS (Unified Facilities Guide Specifications) for Project Schedules; identify critical terms and principles for project scheduling; express the basic processes to develop a Network schedule; develop network from the list of activities showing logic, early and late dates, float, and longest path for Class; identify the important aspects of the Preliminary Project Schedules (PPS); using the Primavera P6 software and class workshop, analyze the Initial Project Schedule; utilizing the Primavera Schedules P6 and classroom exercises, identify changes, discrepancies, common issues between schedule updates; utilizing Primavera P6 and classroom exercises, analyze schedule updates using baselines and Claim Digger; utilizing examples of classroom exercises and Primavera P6 software, analyze time impact using fragnets and CPM schedules; identify case law relating to construction scheduling and delay claims; and identify common scheduling claim issues.

Prerequisites.
Nominees must be assigned to occupational Series 0800. This is a software/computer intensive course – students MUST be proficient in the use of computers. This course is designed for USACE Project and Resident engineers and District, Division, Branch, and Section heads of construction. Students need to have prior knowledge of network scheduling and Primavera P6 software. Students are required to have their own laptop with the Primavera P6 software loaded and operating.

Continuing Authorities Program (CAP)

Control Number: **49** Length: 28 Hours
CEUs: 2.3 PDUs: 23

Purpose.
This course, Continuing Authorities Program, CAP, develops the skill sets of Program Managers, Project Delivery Teams, and Section level chiefs in essential knowledge of CAP Authorities, processes and guidance in managing CAP projects, timely decision-making, and scaling business processes to match complexity of the project.

Description.
The purpose of the CAP is to plan and implement projects of limited size, cost, scope, and complexity in an accelerated manner as compared to traditional specifically authorized projects. CAP Program Overview: General Principles and Intent, Guidance for Specific Project Authorities, Restrictions on Program Eligibility, Statutory Federal Participation Limits, and After Action Reviews. CAP Program Management and Project Management: Coordination Account, Program Cost Sharing, Project Management Plan. CAP Feasibility Phase: Processes, Milestones, and Approvals for Decision Documents, Scaled Plan Formulation, Economic Evaluation, and Environmental Evaluation, Ecosystem Restoration and Estuary Policies Applicable to Sections 204, 206, and 1135, Beneficial Uses of Dredged Material Multi-Purpose CAP Projects, Recreation, Monitoring and Adaptive Management, Converting GI Funded Studies to CAP, and Converting CAP Feasibility Studies to GI. CAP Design and Implementation: Design and Implementation Phase, Project Implementation, Real Estate, Design Deficiency Corrections, Post Implementation Federal and Non-Federal Responsibilities. Legal Agreements: Sponsor Agreements & In-Kind Contributions, Accelerated & Contributed Funds Agreements, Non-Federal Feasibility Work & Non-Federal Design and Implementation Work.

Prerequisites.
Students should be CAP Program Managers, PMs, PDT members (Civil, Geotechnical, H&H, Environmental, Cultural, Cost Specs, Real Estate), Planners, first line supervisors and senior staff responsible for the preparation, review and approval of CAP project/program submittals. Attendees should have basic knowledge of the Corps' Project Management Business Processes and have completed Planning Core Curriculum 1 online course or possess equivalent knowledge of general Civil Works processes.

Contracting Officers Course (Corps Employees Only)

Control Number: **182** Length: 28 Hours
CEUs: 2.4

Purpose.
This is an invitation only course. This is a best practices course for prospective and current USACE Procuring Contracting Officers (PCOs) and Administrative Contracting Officers (ACOs). Invited participants already have a significant foundation of work experience in Contracting. This is an application-based course with several individual and group exercises which emphasize analytical and problem-solving skills relevant to USACE Contracting Officers. This course is not a cram course for a Contracting Officer Review Board (CORB). This course instead helps to refine the existing skill set of prospective and current Contracting Officers through collaborative learning.

Description.
The course learning objectives are as follows: 1. Articulate Contracting Officer authority and limitations; 2. Implement Project Management Business Process (PMBP); 3. Execute effective Acquisition planning; 4. Perform critical solicitation and award phase requirements; 5. Foster post-award collaboration; 6. Demonstrate competent application of Acquisition knowledge. This course includes several individual and group analytical and problem-solving exercises, including a mock Contracting Officer Review Board (CORB) collaborative group exercise.

Prerequisites.
This is an invitation only course. The intended target audience is prospective and current USACE Procuring Contracting Officers (PCOs) and Administrative Contracting Officers (ACOs). Interested employees may submit a registration request to their supervisor. The registration request should include a brief (2 to 3 sentence paragraph) statement about how the employee would benefit from taking this course. If the supervisor concurs, the supervisor submits the registration request to the respective Principal Assistant Responsible for Contracting (PARC) office. The PARC office will make final seat selections and will inform employees of their status.

Please do not attempt to register for this course through the local training coordinator. All registration requests must follow the process described above for this invitation only offering.

NOTE: This course is not open to Contractors or any persons from outside of the U.S. Army Corps of Engineers (USACE). Course requirements include a 70% passing score on the final assessment.

Corrosion Control

Control Number: **9** Length: 36 Hours

Purpose.
This course familiarizes design engineers, maintenance staff and engineers involved with project operations such as structural, mechanical, electrical, etc., with the mechanism of corrosion, the results if unchecked, and the methods of its mitigation. Designers, if familiar with corrosion phenomena, can temper their designs so as to avoid potential problems or make it easier to provide protection.

Description.
Topics included in this course are: fundamentals of corrosion and engineering alloys; principles of cathodic protection and electrode potentials; design of cathodic protection systems; design considerations; atmospheric corrosion; design for underground cathodic protection systems; types of corrosion; painting practices; fresh water and sea water corrosion; system test and evaluation; and materials selection.

Prerequisites.
Nominees must be assigned (a) Occupational series: selected 0800; Wage Grade (b) Grade: GS-07 or above; (c) Other: students should be designers and maintenance personnel.

COST ESTIMATING BASICS

Control Number: **181** Length: 36 Hours
CEUs: 2.9 PDHs: 29

Purpose.
This course provides training on basic cost estimating principles and fundamentals. The training is intended for individuals who are entering the Cost Engineering profession with little or no cost estimating experience or who will be responsible for the review or preparation of detailed construction cost estimates.

Description.
This is a basic, non-computer based course designed to teach individuals the basic principles of construction cost estimate preparation, and how to identify and classify costs associated with construction. Through the use of lectures, visual aids, individual and group practical exercises, the course provides instructions on: (a) an overview of procurement and cost engineering regulations; (b) work breakdown structures; (c) reading construction drawings; (d) quantity calculation and development; (e) performing manual quantity takeoffs; (f) determining labor costs and crew composition; (g) estimating costs of equipment, material, and supplies; (h) developing indirect costs; (i) determining cost escalation and contingencies; and (j) preparing government estimates summaries.

Prerequisites.
Nominees must be assigned (a) Occupational series: 0800; 0802; 0807; 0808; 0810; 0830; 0850; 1301; 1350; (b) Grade: GS-05 or above; (c) Other: Nominees must obtain Huntsville approval before attending this course. A pocket or computer calculator is required for this class. Also, a tablet or notebook computer is permitted for this class for basic computations (e.g., excel).

Cost Reimbursement

Control Number: **1** Length: 36 Hours
CEUs: 2.5 PDHs: 25

Purpose.
This course provides practical guidance on how to structure, solicit, and manage cost-reimbursement contracts. The course is suitable for all functional elements, but is primarily geared to the Corps construction execution workforce. The course directly supports the Corps vision by addressing many contemporary issues regarding the management of innovative contracts and supports the "Best Value" selection process. As noted above, the FY 14 student population was primarily from and interested in service and O&M Contracts... not construction.

Description.
This course covers the acquisition strategy, source selection, and management of cost-reimbursement contracts. The instruction and text material addresses solicitation preparation to final closeout of cost-reimbursement contracts. Specific subjects addressed include the history of cost-reimbursement contracts, acquisition policies, selection of contract type, preparation of the request for proposal, source selection procedures, cost accounting, procurement and property management, Work Authorization Document (WAD) and Earned Value Systems for cost control, fee and profit policies, Corps organization and management, contractors organization, and final closeout.

Prerequisites.
Nominees should be assigned (a) Occupational Series: 0028, 0340, 0560, 0800, 0905, and 1100; (b) Grade: GS-11 or above, or equivalent; Military--Captain or above; (c) Responsibilities: personnel should be assigned or actively engaged in the administration of a current or future cost-reimbursement contract or to a start-up team for a cost-reimbursement contract; (d) Knowledge/skills: nominee should possess a general knowledge of contracting procedures and construction contract administration; (e) Prerequisite training: nominee should have completed the Construction Contract Administration course (No. 366).

Cost Risk Analysis BASIC

Control Number: **220** Length: 32 Hours

Purpose.
This course provides training on basic cost risk analysis principles and fundamentals. The training is intended for the Cost Engineering professional with little or no cost experience in cost risk analysis techniques who will be responsible for the review or preparation of construction contingencies for Civil Works, MILCON and Environmental Remediation cost estimates.

Description.
This is a computer-based course, and is designed to provide a solid introduction to the theory and application of risk analysis problems involving multiple numeric uncertainties (e.g. budget to detailed cost estimating, contingency analysis, and competitive bidding) and demonstrate why risk analysis is necessary, and how to mitigate the probability of having a cost overrun.

Through the use of lectures, visual aids, individual and group practical exercises, the course will provide instructions on: (a) procedures and cost engineering regulations regarding the use of cost risk analysis, (b) basic statistics (c) data gathering, (d) uncertainties identification and quantification, and (e) interpretation and use of the results.

This course will discuss, and provide familiarization and hands on training of the computational tool, Crystal Ball. Crystal Ball is the Corps required software for preparing risk analysis for contingency development.

Prerequisites.
Nominees must be assigned (a) Occupational series: 0800; 0802; 0807; 0808; 0810; 0830; 0850; 1301; 1350; (b) Grade: GS-09 and above, and have completed the Cost Estimating Basics course; (c) Other nominees must obtain CECW-CE approval before attending this course. A pocket calculator and laptop computer with Microsoft Excel and Oracle Crystal Ball is required for this class. Proficiency with Microsoft Excel is required.

CRANE SAFETY

Control Number: **32** Length: 36 Hours

Purpose.
This course provides students with an introductory, fundamental but detailed understanding and knowledge of Load Handling Equipment (LHE) as well as USACE and OSHA safety requirements for a crane program, to include rigging, signal personal and rigger requirements. Inspection, maintenance, training and operational requirements (not certifications) for cranes and hoisting devices are also covered in this 36 hour class. The included field trip proves essential to the understanding of the equipment, rigging and LHE components.

Description.
Areas to be covered in this course include a general but thorough introduction to types of cranes and hoisting equipment, to include common terminology, nomenclature and components. In addition, discussion and overview of the following will be covered:
(a) Basic design and construction of cranes/hoists to include the basic scientific principles associated with crane/hoisting operations; lots of models, examples, hands-on viewing.
(b) Fundamentals of rigging - includes a variety of rigging gear, components and configurations and potential applications to include the requirements for a navel architectural analysis on floating plant, as well as the components of wire rope and inspection requirements and procedures for wire rope, load blocks, and sheaves; lots of samples passed around and explained.
(c) Crane/hoisting signals;
(d) Operator selection, training and certification requirements to include physical requirements;
(e) Inspection requirements of cranes/hoisting equipment;
(f) Operator aids, safety devices and general safety requirements for cranes/hoists;
(g) Operational and load testing requirements to include frequency as well as conditions that trigger the requirements;
(h) Lift planning procedures, to include assembly/disassembly and critical lifts;
(i) Communication and emergency procedures to include accident prevention and investigation and the hazards of power line clearance, and
(j) Similarities and differences between USACE crane/hoist requirements (EM 385-1-1), OSHA requirements, ANSI and consensus standards.
(k) Field trip that provides a hands-on, real world view of equipment, rigging and set-up, parts, pieces, explanations, etc.

Prerequisites.
Nominees should have an occupational need for basic Load Handling Equipment information and related requirements. This course does not provide an in-depth knowledge of cranes and hoists. All grade levels are accepted. Course is specifically recommended for Corps of Engineers Construction QA's, Project Engineers, maintenance foremen/supervisors, safety and health professionals, Environmental Compliance Coordinators, Operational / Maintenance personnel and anyone else with a need to know USACE and contractor crane program requirements to include: basic construction and maintenance safety by stressing vital aspects of following safe work practices and procedures and how and what to monitor for on contractor crane/hoisting operations. Students should bring clothing appropriate for a field trip to a crane yard (close toe shoes, long pants, weather appropriate outerwear, and work gloves for handling of rigging equipment). The Corps will provide hard hats.

Cultural Resources

Control Number: **299** Length: 36 Hours
CEUs: 3.2

Purpose.
This course provides students with a broad-based understanding of the character and quality of cultural resources, a working knowledge of the identification and assessment procedures applied to those resources, and a review of tribal policy principles that impact agency cultural resources management. The course is designed for planners, environmental resources managers, student managers, project managers, and others who will participate in the management of cultural resources and interact with Indian tribes.

Description.
The course addresses cultural resources and overarching laws and regulations that define significance, mandate management, and prescribe treatment. Students will learn the various types of cultural resource categories and their attributes, quality and values. Students receive an overview of Corps planning and management actions that have the potential to affect cultural resources. Focus on the National Historic Preservation Act (NHPA) of 1966, the Archeological Resources Protection Act of 1979, the Native American Graves Protection and Repatriation Act as well as other statutory requirements introduces students to regulatory responsibilities. This course gives special consideration to the procedural requirements of Section 106 of the NHPA and the interrelationships of the agency, the Advisory Council on Historic Preservation, the State Historic Preservation Office, and officials of Indian tribes with the opportunity to apply knowledge to case studies.The program also offers an overview of the nature of Corps relations with Indian tribes including an understanding of the Trust relationship, government-to-government relations, treatment of Native American human remains and associated objects and Indian access to sacred sites. State-of-the-art field techniques, methodologies regional overviews, and data management are illustrated.

Prerequisites.
Nominees must be assigned (a) Occupational series: selected 0020, 0100, 0400, 0800 and 1300; (b) Grade: GS-07 or above (water resource planners, rangers, park managers, planners, study managers, designers - anyone potentially involved with cultural resources during the planning, design, or operation of a project). Senior leaders and decision makers at the USACE District and MSC levels are encouraged to enroll in this course offering. Nominees should have attended the Environmental Impact Assessment course and the PCC1 Civil Works Orientation course, or equivalents.

CW PROGRAM DEVELOPMENT

Control Number: **10** Length: 28 Hours
CEUs: 2.3 PDUs: 23

Purpose.
This training is primarily designed for Civil Works (CW) project delivery team members and program managers with an emphasis on the Civil Works budget/program development, defense, and execution processes. Those with some Civil Works program development experience will benefit the most since this is not an introductory course. It builds on existing experience to provide a comprehensive understanding of Civil Works mission accomplishment, HQ-level programs management activities, the importance of the USACE Project Delivery Business Process (PDBP) in program execution, and includes instruction regarding the HQUSACE interface with Office of Management and Budget (OMB) and Congress.

Description.
The training covers the Civil Works Program Development, Defense and Execution within the USACE Project Delivery Business Process (PDBP), including: (1) the Corps of Engineers civil works organization, the Administration, and the Congressional committees that provide legislative oversight of the civil works program through authorizations and appropriations; (2) program development, including new start and continuing programs, and funding capabilities; (3) program defense, including OMB and Congressional hearings; and (4) program execution, including work allowances, reprogramming actions, performance measurement.

Prerequisites.
This is not an introductory course. Those with experience in Civil Works program management, or who have taken PROSPECT Course 358 will benefit the most from attending course 010. Nominees must be project delivery team members, GS-340 program managers, chiefs of organizations that support the Project Delivery Business Process (e.g., Real Estate, Counsel, and Resource Management). Division and district commanders, deputy commanders with civil works missions, and members of the Senior Executive Service are invited to attend this course.

Dam Safety

Control Number: **28** Length: 32 Hours
CEUs: 2.6 PDHs: 26

Purpose.
This course trains managers, engineers, geologists, technicians, and project operating personnel in FOA engineering, construction, and operations divisions on all aspects of the Corps of Engineers Dam Safety Program. The background and history of dam safety in the Corps is covered along with the multi-discipline design, construction, and operational considerations. Details of planning, conducting, and reporting the results of a periodic inspection are included. Guidance on project surveillance by operation personnel along with the Dam Safety Program are covered in detail. Public awareness and preparedness are included.

Description.
Through lectures, case histories, field visits, and structured student discussions, the course covers all aspects of a dam safety program. The course outlines technical considerations (hydrologic, seismic, geotechnical, electrical/mechanical and structural) as well as the operational requirements (operation, maintenance, surveillance, preparedness, training, and notification). The scope and implementation details of the Dam Safety Program are covered in detail. Presentations, video modules, case histories, and a walk-through inspection are used to effectively present a multi-discipline approach to the successful monitoring and evaluation of Corps of Engineers dams.

Prerequisites.
Nominee must be assigned:
(a) Occupational Series: Selected 0800 and 1350.
(b) Grade: GS and WG, as appropriate, GS-05 or above.
This course is intended for all personnel involved in the design, construction, operation, inspection, and maintenance of Corps dams. Attendees should bring proper attire for field visits, e.g., rain gear, comfortable shoes (no sandals or flip-flops.)

DESIGN BUILD CONSTRUCTION

Control Number: **425** Length: 28 Hours
CEUs: 1.9 PDHs: 19

Purpose.
This course provides current information to Corps of Engineers personnel and stakeholders doing business with the Corps of Engineers on the latest developments, lessons learned, best practices, and processes for the use of Design-Build as a project delivery method.

Description.
Topics included in this course are: an overview of the Design-Build delivery method; acquisition planning; development of technical requirements; special contract requirements and clauses; solicitation, proposal evaluation, contract award; contract administration; industry best practices and lessons learned.

Prerequisites.
Nominees should be involved in the planning, design, acquisition or construction of projects as a stakeholder, or design and construction agent. Experience in Design-Build project delivery is not required as this course provides basic, yet thorough review of Design-Build procedures including Engineering and Design, Construction, Contracting, and Project Management. Target Grades: GS-07 to GS-13.

Development of Project Partnership Agreements

Control Number: **315** Length: 36 Hours

Purpose.
This course provides the basic knowledge, skills, and abilities needed to develop, negotiate and process approval agreements for (Project Partnership Agreements (PPA), Design Agreements (DA), and Feasibility Cost Shared Agreements (FCSA)) used for implementation of cost shared Civil Works water resources development projects and the supporting documents necessary for the agreement packages. Lecturers and instructors include HQUSACE staff, Division staff, and a guest speaker.

Description.
Topics include: (a) Development, negotiation, and processing of Agreements (such as PPA, DA, and FCSA) for cost shared Civil Works water resources development projects; (b) Implementation of cost shared Civil Works projects including cost sharing policies; (c) Planning, Policy, Programs, Real Estate, and Legal aspects and considerations in development of Agreements; (d) In-Kind Contributions authorities; (e) Policies and procedures to account for project funds including preparation of Federal/Non-Federal Funds Allocation Table and determining non-Federal proportionate share; (f) Requirements for accelerated, contributed, and advanced funding; (g) Non-Federal Sponsor Self-Certification of Financial Capability Form; and (h) Project examples and experiences.

Prerequisites.
Nominees must be assigned (a) Grade: GS-09 to GS-15; and (b) current responsibilities in Project Management; Study Management; Engineering Management; Planning; Programs; Real Estate; Counsel; and Cost Share Control Record Managers or others assigned to the Office of Resource Management and Internal Review.

Diesel Generators: Basics/Testing

Control Number: **106** Length: 32 Hours

Purpose.
This course provides a general familiarization with the components and systems that make up a diesel generator and teaches the proper testing and checkout procedures to be followed prior to accepting generating units from the construction contractor.

Description.
Through lectures, visual aids, and demonstration sessions, this course covers such subjects as engine and generator basics, fuel systems, heat transfer systems, generator exciters and regulators, governors, instrumentation, design criteria, various factory and field test procedures, automatic transfer switches, and typical installation problems. A portion of this course will utilize a diesel generator unit for performing typical field tests and requires hands on learning.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0802, 0809, 0810, 0830, and 0850; (b) Grade: GS-07 or WG-07 or above. Nominees should have current or projected responsibilities that include power generation specification, procurement, installation, testing or operation. The broad content of the course is beneficial for technically-oriented construction, design, and maintenance personnel. Although this is not intended to be a maintenance course, maintenance personnel should benefit from this course. Recommend that nominees complete the Electrical, Mechanical, or General Quality Verification Courses prior to taking this course. Engineers are exempt from this prerequisite requirement.

DISTRICT OFFICER INTRODUCTORY COURSE

Control Number: **334** Length: 36 Hours
CEUs: 3.4

Purpose.
This course is designed to orient the newly assigned engineering officer who is an engineer by training but has done little or no business in the USACE environment. The course provides a broad overview of the organization and covers a wide range of topics relating to all facets of the Corps of Engineers mission.

Description.
Course is structured to take students through all phases of military and civil works projects. Specific topic areas include programming, budget design, project management, acquisition, planning, contracting, construction contract management, legal considerations, and environmental issues. Case studies and practical exercises are utilized to enhance the student's understanding of specific subject matter in selected areas of the course. The course is designed to familiarize the student with the field operating environment.

Prerequisites.
Nominees must be (a) Occupational branch: Corps of Engineers; (b) Military Pay Grades: O-2, O-3, or O-4; (c) newly assigned officers who will be assigned duties within the USACE environment in the Area of Concentration (AOC) 12A Facilities/Contract Construction Management Engineer (FCCME); (d) newly assigned civilian personnel GS-12 (space available) and above. All other candidates are required to obtain a waiver.

DIVE SAFETY ADMIN

Control Number: **175** Length: 40 Hours

Purpose.
This course provides Corps of Engineers employees who are assigned as diving coordinators, alternate diving coordinators, Dive Inspectors and Safety Office Diving Safety Representatives with the necessary skills, knowledges, and abilities to perform their assigned duties. This training will provide students with state-of-art technology and methodology to evaluate underwater diving operations and effectively manage diving contingencies. NOTE: This course is required for all diving coordinators and alternate diving coordinators, and is recommended for all Safety and Occupational Health Office Diving Safety Representatives.

Description.
Students will become familiar with diving systems and methodology, including support activities and dive equipment. This course consists of classroom presentations and practical exercises in dive planning and execution involving actual dive operations. The focus of the course is on Safety Requirements, Dive Planning, Hazard Analysis, Risk Management Emergency Management and Contract Administration. Sessions pertinent to underwater diving operations will include, but are not limited to, the following topics and activities: (a) diving physics; (b) diving physiology; (c) diving medicine; (d) modern diving systems and support equipment; (e) SCUBA equipment and operations; (f) surface supplied air equipment and operations; (g) decompression principles & associated tables; (h) modern diving accident management techniques; (i) working dive planning; (j) diver supervision principles and practices (k) preparation and use of Activity Hazard Analyses; (l) USACE, OSHA, and US Navy diving regulations (ER 385-1-86, EM 385-1-1, 29 CFR 1910, and US Navy Diving Manual); and (m) management of the diving function.

Prerequisites.
Students for this course should have a current or projected assignment as a District Diving Coordinator, Alternate District Diving Coordinator, Dive Safety Inspector, or Safety and Occupational Health Office Diving Safety Representative. Students must participate in all lectures, written and practical exercises, and score at least 70 percent on the comprehensive post-course examination to pass the course. Exceptions or deviations to any of these prerequisites shall be approved by the HQUSACE Safety and Occupational Health Office.

Diving Refresher

Control Number: **259** Length: 74 Hours

Purpose.
This course provides Corps divers and diving supervisors with the latest technical and managerial data as it relates to underwater diving. This course is required at 4-year intervals after completing the Working Diver course as stated in ER 385-1-86 for those persons working with underwater diving programs. Students must satisfactorily complete all aspects of the training to receive certification.

Description.
Through lectures and demonstration sessions, this course covers (a) regulatory requirements, (b) dive planning, (c) inspections, (d)deep dive, (e) identification and use of Activity Hazard Analysis, (f) dive preparation, (g) diving physics/gas laws, (h) diving physiology, (i) diving psychology and types of stress, (j) diving medicine, (k) SCUBA equipment use and operations, (l) Surface Supplied Air equipment, (m) decompression actions, equipment, principles and associated types of tables, (n) diving accident management, and (o) dive operations. All attendees must make at least 70 percent on comprehensive post-course examination for recertification. Attendees must participate in and complete all phases of instruction. Failure to participate in all class activities will be cause for course failure.

Prerequisites.
(a) Students for this course must have a current or projected assignment to a position requiring underwater diving skills and, prior to attending, must complete Course 035, Working Diver and provide the certification certificate from that course. Failure to provide evidence of diver certification will be cause for rejection; (b) Nominees must successfully complete a diving medical examination as detailed in ER 385-1-86 within the past 11 months and provide a copy of the completed medical form to the training agent at least two weeks prior to the class start date; (c) proof of the last four government dives within the last 11 months; and (d) students must participate in all lectures, written and practical exercises, and score at least 70 percent on the comprehensive post-course examination, two diving practical examinations, and quizzes administered during the course to receive the diver certification. Exceptions or deviations to any of these prerequisites shall be approved by the HQUSACE Safety and Occupational Health Office.

Dredge Cost Estimating

Control Number: **118** Length: 36 Hours
CEUs: 2.8 PDHs: 28

Purpose.
This course provides an understanding of cost engineering for dredging projects. Methodology for cost engineering of pipeline, hopper, and mechanical dredging is presented. Training is provided on the use of CEDEP, the official dredge estimating software program.

Description.
Through lectures, discussion, demonstrations and class problems, the course covers the current requirements for the preparation of dredge cost estimates. Specific emphasis is placed on definitions, equipment selection, productivity and cost detail development in the preparation of cost estimates for projects utilizing pipeline, hopper, and mechanical dredges. These principles are further discussed in relationship to the current version of the CEDEP software.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0800; 0807; 0808; 0810, 0830; 0850; 1301; 1350. (b) Grade: GS-05 or above; Nominees are those who have a need to learn more about cost estimates for dredging projects. These employees are envisioned to work in the engineering, operation, planning, or construction divisions of Corps Districts or Divisions. Their educational background should not be less than that of an engineering technician or equivalent. (c) Nominees should be knowledgeable of computer software and computer spreadsheet programs. Dredging Fundamentals is a suggested (not required) class to be taken prior to this course.

DREDGING FUNDAMENTALS

Control Number: **333** Length: 36 Hours
CEUs: 2.5 PDHs: 25

Purpose.
The purpose of the course is to provide the student with the fundamental knowledge of dredging theories and practices associated with the USACE dredging program.

Description.
Through lectures, group discussions, examinations, and a field trip, this course teaches the student fundamental dredging theory and accepted dredging practices in addition to basic information on how Corps dredging projects are authorized, funded, engineered, managed, and maintained. A brief overview of dredge estimating, dredging safety, hydrographic surveys, and dredging contract administration is also provided. A field trip to see dredging equipment and/or dredging-related activities or navigation features is included to help the student understand the material taught in the classroom. This course is a prerequisite for the Dredge Cost Estimating course.

Prerequisites.
Nominees must be assigned
(a) Occupational Series: Dredging related; Navigation related;
(b) Grade: WG-04/GS-04 and above (or equivalent).

Earthwork Construction - Quality Verification

Control Number: **40** Length: 36 Hours
CEUs: 2.4

Purpose.
This course provides the participant with proper earthwork inspection techniques and improves quality assurance management on construction projects. Insight is also provided as to the technical reasons behind construction requirements and how these requirements contribute to successful construction.

Description.
Through lecture, conference sessions, laboratory demonstrations and practical exercises this course covers the field of soils identification, soil sampling and testing, and techniques for earthwork inspection and testing. This course primarily teaches earthwork embankment construction, although some material pertaining to building foundation preparation is included.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0801, 0802, 0809, 0810, 0830, and 0850; (b) Grade: GS-05 to 09. Students should have a current or projected assignment as a general or earthwork construction inspector or related duties at the field level. This course is also well suited for junior engineers as part of the training provided in Engineer-In-Training programs, and for Corps division, district, and field office personnel directly concerned with construction operations. Nominees must not have attended this or a similar course within the past 5 years.

ECOLOGICAL RESOURCES: INVENTORY & EVAL

Control Number: **168** Length: 36 Hours

Purpose.
This course provides students with a working knowledge of current techniques and methods that can be used to identify, analyze, and evaluate ecological resources. Emphasis is placed on state-of-the-art procedures for inventory and data collection and evaluation of natural resources required for compliance with Federal laws, Executive Orders, and Corps of Engineers policy and planning guidance. Ecological resources include broadly defined fish and wildlife populations, habitats, and their relationships to each other and the environmental/ecosystem. While the course is not an introductory level course, it is assumed that the student has limited or outdated knowledge of fish and wildlife population dynamics, vegetation sampling, and assessment techniques for these resources.

Description.
Corps planning guidance and the "Principles and Guidelines" for planning water resources projects are used as the basis to describe the information required for ecological resources evaluation. Emphasis is placed on describing and demonstrating cost-effective, state-of-the-art techniques and procedures for identifying, inventorying, assessing, evaluating, and displaying ecological resources information. Habitat assessment procedures and inventory techniques are described and demonstrated for birds, mammals, reptiles, amphibians, and fishes. Emphasis is placed on those techniques that can be used to inventory sensitive species and evaluate their habitat or potential habitat. Students receive hands-on training through field trips taken to both terrestrial and aquatic sites where they conduct selected animal inventories and habitat assessments. Students will be provided with key sources of ecological resources information and technical assistance within the Corps, other agencies, and outside sources. Instructors emphasize that ecological resources cross geographic and political boundaries and encourage interdisciplinary and cross-stovepipe collaboration.

Prerequisites.
a. This course is primarily for technical personnel whose duties involve the identification, evaluation, analysis or management of ecological resources. Project and Program Managers responsible for project and program management activities, particularly those involving ecosystem restoration, would also benefit.
b. Occupational Series: Primarily 0028, 0400, and 1300.
c. Grade: GS-09 or above. Disciplines (other than the above) may be accepted provided nominee's present or anticipated duties involve the management, analysis,

identification, or evaluation of ecological resources. SPECIAL INSTRUCTIONS: Much of this course involves field exercises. Therefore, students should prepare to work in both upland and aquatic environments and to bring appropriate shoes and clothing. Special tours may be available after class hours.

Economic Analysis MILCON

Control Number: **101** Length: 24 Hours

Purpose.
This course explains the fundamental principles and procedures for developing economic analyses (E/A) in support of military construction and capital investment projects. The practical application of economic principles is provided through "hands-on" computer training sessions in which participants develop economic analyses using the Army's economic analysis package, ECONPACK. Economic Analysis is an integral and required justification for military construction projects and capital investment proposals. This course is specifically designed to enable participants to prepare adequate, analytically accurate economic analyses in support of project funding requests to OSD and Congress. Lectures, work group exercises, practical exercises, and computer sessions are used to familiarize participants with the theoretical principles and automated capability to formulate, develop, document, and evaluate E/A.

Description.
Specific topics include (a) an overview of economic analysis as it relates to the planning, programming, and review process; (b) the economic analysis process: the logical sequential process used to develop E/A; (c) life-cycle cost analysis: terms and definitions; (d) the concept of equivalence, the time value of money, and the discounting and treatment of inflation; (e) life-cycle cost calculations: net present value, savings-to-investment ratio, discounted payback period; and (f) sensitivity analysis: testing data uncertainties. Students, using the automated system, ECONPACK, will perform calculations, document, and report analysis results. The course covers the automatic transfer of completed economic analyses to a DD Form 1391.

Prerequisites.
Nominees must be assigned to current positions involved with planning, preparing, programming, or reviewing requests for government military construction or military capital investment projects.

Ecosystem Restoration

Control Number: **280** Length: 32 Hours

Purpose.
The restoration and protection of environmental resources in our Nation's ecosystems is a central mission in the Corps of Engineers Civil Works program. This course will provide an interdisciplinary perspective on ecosystem restoration, protection, and management. Students will learn the principles and vocabulary of selected disciplines outside their own and will become familiar with relevant case studies and issues in planning and conducting ecosystem restoration projects. At the end of the course, students will have a more holistic understanding of ecosystems and the requirements for successfully restoring, protecting, and managing them.

Description.
Through a series of lectures, practical exercises, and field trips, students will be introduced to basic concepts in ecology, hydrology, geomorphology, and biogeochemistry as they interrelate within a given ecosystem. These basic concepts will be explored and evaluated for their roles in the restoration, protection, and management of degraded ecosystems. Emphasis will be on ecological interactions and scale-dependent relationships among the physical environment, biota, and ecosystem processes and disturbances. The structure and function of an ecosystem will be discussed and related to real-life situations and projects, as appropriate, through field visits. Relevant models and computerized tools will be demonstrated (e.g., decision support systems, monitoring metrics, etc.).

Prerequisites.
(a) This course is meant primarily for engineers and scientists involved in the planning, operation, and management of ecosystem restoration projects, including permits under the Clean Water Act that would involve ecosystem restoration; (b) Grade: GS-09 and above; (c) A Bachelor of Arts or Science degree or higher; and (d) Occupational series: 0200, 0100, 0400, 0801, 0807, 0810, 0819, 0905, 1301, 1315, 1350.

ELECTRICAL DESIGN I

Control Number: **373** Length: 36 Hours
CEUs: 3.3 PDHs: 33

Purpose.
This course clarifies criteria and practices for electrical engineer designers to assure an adequate design and review of electrical features of government projects and to improve design quality and incorporate AT/FP requirements. The course will develop the complete electrical design of a 40,000 square foot office building, including sizing of service, distribution equipment, feeder and branch conductors, transformers, panelboards, grounding components, fire alarm and fire pump, exterior and interior lighting, lightning protection, energy savings, protective devices, coordination and power requirements.

Description.
(a) INTRODUCTION AND DESIGN PROCESS: This session discusses project development and provides an overview of DD Form 1391, design construction and post completion steps, and cost codes. An overview of the site plan, floor plan, and one-line diagram is presented.

(b) DESIGN-BUILD: This session will discuss the Design-Build process in general and the development of the electrical requirements for the Request for Proposals (RFP) package.

(c) ONE-LINE DIAGRAM: This session develops a one-line diagram from the electrical distribution system connection to the building service entrance equipment. Emphasis is on equipment selection and sizing in accordance with DoD criteria, codes, and good engineering practice. Protection and coordination requirements will be discussed.

(d) LIGHTING DESIGN: This session includes selection and application of interior and exterior lighting fixtures and emergency and exit lighting systems. Interior lighting calculations (using the zonal cavity method) and exterior lighting calculations (using the point-to-point method) are discussed and demonstrated.

(e) ELECTRICAL CALCULATIONS: This session includes calculations for branch circuits and feeders, fire-pump motor circuits, and panel schedules; short-circuit currents (using the per-unit system and the point-to-point method), voltage drop calculations, and demand and diversity factors.

(f) FIRE ALARM SYSTEMS: This session discusses the specific application of NFPA 72 and 101 to the design of the office building. Placement of notification appliances and signaling devices are determined along with developing the riser diagram.

(g) ELECTRICAL POWER SYSTEMS: This session discusses the electrical design requirements for UPS, harmonics, transformers, surge protection, grounding, and emergency power. Energy savings and design considerations will be presented.

(h)CLASSROOM EXERCISE: Students design a building's electrical system.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0850,and 0855. Those in 0801 series or equivalent electrical professions who have an electrical background may also attend. Nominees should be electrical or electronic engineers or have electrical engineering responsibilities with a basic background in the practical applications of electrical and electronic projects.

ELECTRICAL DESIGN II

Control Number: **374** Length: 36 Hours
CEUs: 3.3 PDHs: 33

Purpose.
This course clarifies criteria and practices for electrical engineer designers to assure an adequate design and review of electrical features of government projects and to improve design quality. The course will introduce the basics of electrical harmonics, power system configurations, special occupancies, alternate power systems, fire alarm and mass notification, arc flash, public address, engine generator set applications, criteria and design requirements, lightning protection, and cathodic protection. These topics will be reinforced through class exercises.

Description.
Specific topics include harmonics, power system configurations, special occupancies, alternate power systems, fire alarm and mass notification, arc flash, public address, engine generator set applications, criteria and design requirements, lightning protection, and cathodic protection. Students will participate in a classroom exercise.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0850,and 0855. Those in 0801 series or equivalent electrical professions who have an electrical background may also attend. Nominees should be electrical or electronic engineers or have electrical engineering responsibilities with a basic background in the practical applications of electrical and electronic projects.

Electrical Quality Verification

Control Number: **42** Length: 36 Hours
CEUs: 3.0 PDHs: 30

Purpose.
This course provides the participant with (a) requirements and techniques of electrical quality assurance to comply with contract requirements; (b) increased knowledge of materials, equipment, installation, and quality assurance techniques; and (c) training in interpreting plans and specifications and the National Electrical Code (NEC).

Description.
Through lectures and directed conference sessions, this course presents methods of quality assurance for interior and exterior distribution, motors, controls, lighting, special alarm systems, grounding and hazardous locations, and other electrical installations. It also places emphasis on enforcement of contract requirements, compliance with electrical safety, the electrical code, and the contractor's obligation for quality control under the Corps' quality management program.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0801, 0802, 0809, 0810, 0830, or 0850; (b) Grade: GS-05 or above, and equivalent. Students should have a current or projected assignment as an electrical or general quality assurance representative. Engineers are exempt from these eligibility requirements.

ELECTRONIC SECURITY SYSTEMS DESIGN

Control Number: **360** Length: 36 Hours
CEUs: 3.2 PDHs: 32

Purpose.
This course is directed toward a variety of professional disciplines that typically make up an electronic security design team, including: physical security specialists, anti-terrorism and force protection officers, engineers, technicians, planners, and project managers. Each student is given the basic knowledge and skills necessary to contribute to an ESS design effort.

Description.
Students are provided a solid foundation in all aspects of ESS technology and design. Instructors with extensive ESS qualifications and experience explain the basic theory, operation, and application of all ESS components--including intrusion detection systems (IDS), access control systems (ACS), Video Systems, data transmission systems and illumination sources. Requirements and techniques for effective system integration using robust communications, commmand, and control (C3) infrastructure are emphasized. After completing the course, students should be proficient at conducting an ESS site survey, developing an ESS concept design, and performing quality assurance (QA) inspections and systems acceptance testing during the ESS installation phase. Throughout the course students are encouraged to actively participate by asking questions, analyzing case studies, and solving practical design problems.

Prerequisites.
Grade: GS-07 (or Military E-5) or higher involved with using, planning, designing, or managing electronic security systems.

Engineering and Design Quality Management

Control Number: **208** Length: 24 Hours
CEUs: 1.7 PDHs: 17 LUs: 17

Purpose.
Improve the quality of projects, products and services, and enhance customer satisfaction by training team members in the policies, principles, processes, and tools of Engineering and Design Quality Management (E&D QM). Emphasize the role of Engineering in the USACE Business Process.

Description.
The student will be able to effectively apply E&D QM policies, principles, processes, and tools in the planning and design of projects. Emphasis is given to project planning, criteria development, designer selection, project design and review, construction, and operations and maintenance phases. The Civil Works, Military Programs, Support For Others, and Environmental project delivery processes are presented from the perspective of improving technical quality, timeliness and cost effectiveness. The course covers the design of projects by private sector architect-engineer firms and in-house technical personnel. Classroom presentations are supplemented by active classroom discussions and group exercises.

Prerequisites.
Grade: GS-07 and above; Series: 0800 and 0340; Corps team members involved with the project delivery process. Customers and employees of other agencies having an interest in Corps E&D QM processes are encouraged to participate.

ENVIRONMENTAL IMPACT ASSESSMENT

Control Number: **169** Length: 36 Hours
LUs: 31

Purpose.
This course provides students with skills to develop and evaluate information needed to facilitate the preparation of an environmental assessment or an Environmental Impact Statement for work commonly undertaken by the Army Corps of Engineers, such as planning studies, the operation and management actions of Federal projects and the consideration of environmental effects as it relates to permit application procedures administered by the Corps of Engineers.

Description.
This course provides training on the process of environmental impact assessment and how the information developed through this process is used to inform decision making as it pertains to work carried out by the US Army Corps of Engineers. The goal of the environmental impact assessment process is to develop and analyze sufficient information needed to demonstrate compliance with the National Environmental Policy Act (NEPA) and other Federal environmental laws such as the Clean Water Act, Clean Air Act and Endangered Species Act, and applicable Executive Orders such as E.O. 12898 on Environmental Justice. The class will emphasize how the impact analysis process facilitates the preparation of an environmental assessment and environmental impact statement.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0020, 0100, 0400, 0800, and 1300 or by demonstration of special needs related to job responsibilities; (b) Grade: GS-07 or above.

ENVIRONMENTAL LAWS & REGULATIONS

Control Number: **170** Length: 36 Hours
LUs: 31

Purpose.
After completing the course, students will be able to (a) list major federal statutes designed to protect the environment; (b) summarize the major provisions of each federal environmental law and relationship to activities of the Corps of Engineers; (c) find the federal and state environmental statutes and regulations pertinent to a specific Corps activity, given access to a reference library; (d) identify and state legal requirements for environmental protection related to specified Corps activity, given access to suitable reference materials.

Description.
This is a general survey course designed for non-attorneys or for attorneys with limited background in environmental law. Topics include federal laws and regulations for environmental protection; pollution standards and variances; congressional and judicial developments; economic and technical difficulties in meeting standards; relation of the Corps of Engineers to state and federal agencies in meeting standards and enforcing laws; methods of monitoring pollution; legal penalties; litigation techniques; the Rivers and Harbors Act of 1899 regulatory provisions; the National Environmental Policy Act (NEPA); Executive Order 11514; the NEPA regulations of the Council on Environmental Quality; the Federal Clean Water Act; the Federal Clean Air Act; the Resource Conservation and Recovery Act; the Toxic Substances Control Act; the Endangered Species Act; the Fish and Wildlife Coordination Act; the Historic Preservation Act; the Noise Control Act; the Federal Environmental Pesticide Control Act; the Coastal Zone Management Act; regulations of the Environmental Protection Agency; and state laws and regulations.

*This course is not intended for personnel primarily involved with hazardous and toxic waste projects and does not include detailed coverage of the Resource Conservation and Recovery Act (RCRA), the Comprehensive, Environmental Response, Compensation and Liability Act of 1980 (CERCLA), or the Superfund Amendments and Reauthorization Act (SARA) of 1986.

This course is ISEERB (Interservice Environmental Education Review Board) approved. It has been reviewed by subject matter experts from DOD Components and found to be suitable to more than one agency.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0020, 0100, 0400, 0800, and 0900; (b) Grade: GS-07 or above. Nominees should have the abilities stated in the Environmental Impact Assessment course.

Environmental Considerations in Civil Works

Control Number: **408** Length: 36 Hours

Purpose.
This class surveys environmental topics needed for compliance for USACE Civil Works projects. Participants learn to recognize the basis and key components of NEPA documents consistent with applicable environmental laws, regulations and procedures necessary to conduct civil works planning, design, construction and operations. Course includes field trip and class exercises to demonstrate and apply course learnings.

Description.
The class consists of a series of modules and exercises summarizing the many laws, regulations, and procedures governing environmental aspects of the Corps of Engineers civil works process. Modules include an overview of the compliance under the National Environmental Policy Act, and the contents and procedural requirements for the preparation of Environmental Assessments and Environmental Impact Statements. Environmental compliance discussions address the: Endangered Species Act, Fish and Wildlife Coordination Act, National Historic Preservation Act, Clean Water Act, Clean Air Act, Coastal Zone Management Act, Magnuson-Stevens Fishery Management Act, and the Wild and Scenic Rivers Act. Other topics include mitigation, cost effectiveness analysis, environmental sustainability, and invasive species. In addition, students are provided guidance on ecosystem restoration authorities and practice under both the continuing authorities and general investigation programs. Ecosystem and other impact assessment methods are reviewed, with exercises focused on the selection of assessment procedures for habitat evaluations.

Prerequisites.
Nominees should be newly assigned to civil works, engineering, construction, operations, or planning programs. Student experience should be less than 5 years in fields having a nexus with a need for an understanding of environmental considerations in the civil works process. Grade level: GS-9 through GS-12.

ENVIRONMENTAL REGULATIONS PRACTICAL APPLICATION

Control Number: **398** Length: 36 Hours
CEUs: 2.2 PDHs: 22

Purpose.
This course is designed to further the student's understanding and ability to apply the technical requirements of various major federal environmental regulations. This course consists of a review of the technical application of selected environmental requirements pertinent to compliance issues. It will not consist of an exhaustive, detailed study of environmental statutes and regulations.

Description.
This course is comprised of discussions and practical exercises pertaining to the technical application of various environmental regulations such as RCRA waste classification and generator standards, used oil management, NPDES wastewater and stormwater requirements, SPCC plans, PCB management, Clean Air Act regulations, USTs, SWDA requirements, Spill reporting, Pesticide management, Hazardous materials transportation, and EPCRA requirements. The course also includes a brief introductory session on environmental management systems addressed in EO 13148. This course focuses on the practical application of these regulations during day-to-day compliance activities at DoD installations, Corps construction projects and Civil Works Projects and Facilities.

Prerequisites.
Nominees must have worked at least one year on environmental compliance projects, environmental projects, military construction projects, or civil works environmental compliance projects or have attended an environmental laws and regulations course within the past three years. Target audience includes engineers, scientists (chemists, industrial hygienists, geologists, etc.), Construction personnel, environmental compliance officers, ECAS and ERGO coordinators, environmental protection specialists, and operations personnel responsible for the technical application of various environmental compliance requirements.

ENVIRONMENTAL REMEDIATION TECHNOLOGIES

Control Number: **395** Length: 36 Hours
CEUs: 2.8 PDHs: 28

Purpose.
This course provides the student with a general overview of current containment, ex-situ, and in-situ HTRW technologies and associated construction QA practices. The information is intended for use by geologists,engineers, chemists, and other professionals involved in project planning, technology selection, design, construction, operation, and optimization of remediation projects or oversight of contractor efforts on environmental HTRW remediation sites.

Description.
After completion of this course, the student should have an understanding of the current site HTRW remediation technologies, and construction QA practices being used on USACE projects. The class trip to a hazardous waste site provides an opportunity to see technolgies that have been implemented. The student will also be introduced to available guidance from the USACE, EPA, Air Force, ITRC, ASTM, and other sources.

Prerequisites.
Nominees should be in occupational series 1300 or 0800 or working as an Environmental Protection Specialist or Project/Technical Manager on remediation projects. Nominees must be in grades GS-7 or higher. Courses in soils, hydrogeology, and/or chemistry would be helpful, but are not necessary. Students should bring clothing suitable for a field trip on one of the days.

ESTIMATING FOR CONSTRUCTION MODIFICATIONS

Control Number: **180** Length: 36 Hours
CEUs: 3.0 LUs: 29 ACE: 2.0

Purpose.
The course objective is to cover the various elements of a cost estimate (e.g., labor, material, equipment, job office overhead, home office overhead, and bond and profit costs) and how to effectively and efficiently develop an estimate for construction modifications. This PROSPECT training delivers intermediate level instructions and provides computer-based tools to support in the preparation of estimates for construction contract modifications within USACE policies and procedures.

Description.
Through computer-based tools, lectures, hands-on exercises and case study sessions, this course covers the various elements of a cost estimate (e.g., labor, material, equipment, job office overhead, home office overhead, bond and profit costs) and how to effectively and efficiently develop an estimate for construction modifications. Also covered in the course are the estimating procedures for time extensions, delays, suspensions, impacts to both the changed and unchanged work, acceleration, extended home office overhead costs (Eichleay) and the benefit of the well prepared estimate in negotiations of a final modification settlement.

Prerequisites.
Prerequisite: Nominees may be from (a) any civilian occupational series or military specialty; (b) Grade: GS-07 or above and comparable military with a current or projected involvement in the preparation, review, or use of construction cost estimates for contract modifications. Students must be proficient in the use of a personal computer. Prior knowledge of Microsoft Excel is required. This course is highly desirable for USACE construction managers and cost engineers.

Recommended Prerequisite Training: Student should have completed the Cost Estimating Basics (#181), or possess a firm understanding of basic estimating skills and principles.

Finance and Accounting

Control Number: **12** Length: 32 Hours
CEUs: 3.3

Purpose.
To enhance the attendee's knowledge and understanding of USACE finance and accounting policy and managerial accounting principles in USACE.

Description.
The concepts of finance and accounting policies and procedures in the Corps of Engineers are presented. Emphasis is placed on professional accounting standards and requirements, managerial accounting functions, and compliance with the Chief Financial Officers' Act.

Prerequisites.
Nominees must be assigned in CP-11 in one of the following Occupational Series: 0510 Accountant; 0501 Financial Analyst; 0505 Financial Manager; 0511 Auditor; 0560 Budget Analyst. Participants must be at GS-07 grade level or above. Students must be Corps of Engineers employees, DA interns assigned to USACE Resource Management, or foreign nationals working in USACE Resource Management Offices. Contact the course Program Manager for any exceptions.

Fire Protection Engineering (Basic)

Control Number: **6** Length: 36 Hours
CEUs: 3.4 LUs: 34

Purpose.
This course teaches architects and engineers the necessary skills and knowledge required to implement the fundamental considerations of fire protection in building design and construction. After completing the course, the student should be able to review basic fire protection analyses and drawings more efficiently.

Description.
The course covers basic fire protection for facilities. The course includes instruction on fire-rated construction, building and life safety codes, exit requirements, special hazard protection, and general requirements of fire suppression systems, fire alarm and detection systems, and water supplies.

Prerequisites.
Nominees must meet the following criteria: (a) Occupational Series: Selected 0800, (b) Grade: GS-07 or above, (c) students should have a current or projected assignment in a safety office, in an engineer design section, in a construction office, or as a project manager with duties which require a technical knowledge of fire protection engineering principles.

Fire Sprinkler Systems Design

Control Number: **33** Length: 36 Hours

Purpose.
This course teaches the basic knowledge and skills necessary for the design, calculation, and review of automatic fire sprinkler systems. The Corps of Engineers requires personnel involved in fire suppression system design to be familiar with all required fire suppression systems.

Description.
This course teaches the basic knowledge and skills necessary to perform design, hydraulic calculations, inspection, and testing of fire sprinkler systems for military facilities, as well as the testing and analysis of fire pumps and water supplies. It also identifies techniques for reviewing construction shop drawings

Prerequisites.
Nominees must meet the following criteria: (a) Occupational Series: Selected 0800, (b) Grade: GS-07 to GS-11; (c) students must be involved in design/construction of fire extinguishing systems as part of their duties or require this knowledge in their work.

Floating Plant Safety

Control Number: **81** Length: 28 Hours

Purpose.
This introductory course provides personnel with current safety and health information with which they will be able to perform required safety and health inspections of the Corps of Engineers and contractor owned floating plant and dredging equipment and/ or operations. The intent of this training is to familiarize students with pertinent safety and health requirements, including the Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1), US Coast Guard requirements, applicable Code of Federal Regulations, and other industry standards pertaining to floating plant and dredging equipment and operations.

Description.
This introductory course is designed for Government personnel who will have responsibility for purchasing, maintaining, inspecting, or operating floating plant, dredging equipment and/or operations subject to the requirements of EM385-1-1. Some of the specific areas covered in this course include: (a) overview of applicable safety standards; (b) types of floating plant/dredges; (c) in-depth review of Section 19 of EM-385-1-1; (d) reviewing contractor safety submittals; (e) contractual safety requirements and/or specifications; (f) electrical safety on floating plant; (g) fire prevention and required on-board equipment; (h) rigging and hoisting equipment; (i) confined space and environmental requirements; (j) how to perform safety inspections and record findings; (k) on-board inspections of floating plant (practical exercise); (l) safety program management; and (m) contingency/emergency operations. Methods of instruction include open discussions, lectures, videos, on-site visit, and practical exercises.

Prerequisites.
Nominees should include those identified to become dredging inspectors, quality assurance representatives, project and resident engineers, safety specialists, managers and/or engineers, vessel operators and crew, maintenance personnel, and personnel in other career fields that have limited experience wit floating plant and dredging safety. Students should have a basic understanding of floating plant and dredging equipment and/or operations. Students should bring clothing appropriate for a field trip aboard an operating vessel, normally located on open deck areas. Safety and/or athletic shoes are acceptable for secure footing on open deck areas. The Corps will provide PFD's, hard hats, and hearing protection. A picture ID is required. Laptop computers or other devices to aid in learning are required.

Flood Frequency Analysis

Control Number: **123** Length: 36 Hours

Purpose.
This course provides a basic understanding for the correct application of the Interagency Committee on Water Data guidelines on computation of flood flow frequencies. The computer software HEC-SSP is used throughout the course.

Description.
This course enables the participant to make technically sound and efficient discharge-frequency estimates. The course focuses on the theoretical basis for frequency analysis, application of techniques contained in the "Guidelines for Determining Flood Flow Frequency," Bulletin 17B, and application of the computer program HEC-SSP. The course is intended for engineers, hydrologists, and others involved in developing discharge-frequency estimates at gaged and ungaged locations.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0800, 1300, and 1500; (b) Grade: GS-07 or above. Course nominees should be engineers who perform professional work in the fields of hydrology and hydraulics. Nominees should have one or more years of experience in these areas. It is suggested that course participants be in positions where, in the next year or two, they will be involved in developing frequency curves, performing regional analysis, or determining generalized skew coefficients. Course nominees must have completed a college-level statistics course in order to succeed in this class.

FORMAL SOURCE SELECTION

Control Number: **183** Length: 28 Hours
CEUs: 2.3

Purpose.
This course provides basic skills to ensure acquisition teams are thoroughly trained in the regulatory and prescribed procedures mandated for proper execution of the formal source selection process. This process covers the evaluation, documentation and selection of contract awards by individuals other than the Contracting Officer. Through instruction and group exercises, students will gain the technical expertise needed to implement the required evaluation and selection procedures.

Description.
Do you see yourself as a participant in an upcoming source selection? This course prepares individuals to effectively enhance their participation on a source selection team. This course includes the latest best practices for (1) Roles and Responsibilities of source selection team, (2) Acquisition Planning, (3) Procurement Integrity Act, (4) Developing Appropriate Evaluation Approaches/Criteria, (5) Documenting the evaluation, (6) Negotiation and Contract Award, (7) Notification and Debriefing. Course includes individual and group practical exercises.

Prerequisites.
This course is intended for individuals who are participating or expect to participate as an acquisition team member/participant in the source selection process. Potential participants include: (1) Contracting 1102 series, Engineer 800 series, Program Managers, and Contingency Contracting Officers, (2) Subject Matter Experts requested to participate as members or advisors, i.e., Counsel, Resource Management, Cost Price Personnel, (3) External customer evaluator representatives of requirements received for source selection evaluation.
NOTE: This course is not open to Contractors. Course requirements include a 70% passing score on the final assessment.

Fundamentals of Wetlands Ecology

Control Number: **272** Length: 36 Hours
CEUs: 2.3 PDHs: 23

Purpose.
The restoration of fish and wildlife habitat and other wetland functions is a high priority project purpose in the civil works program. Wetlands typically comprise a major portion of the fish and wildlife habitat restoration projects currently being planned by Corps districts. However, additional wetland functions such as improvement of water quality are becoming increasingly recognized for their importance in many Corps' programs. Corps personnel who have no, or only limited, experience or education with wetland ecosystems need to know the fundamental concepts of wetlands science and management. This course provides an introduction and overview of basic wetland ecological concepts and principles in the context of planning and operating civil works environmental and mitigation projects.

Description.
Students are provided with state-of-the-art basic knowledge of wetland flora and fauna, hydrology, soils, and ecology through classroom presentation and field trip participation.. The course emphasizes wetlands functions and values in an ecosystem perspective. Both saltwater and freshwater wetlands will be addressed in the course. The relationship of wetlands to adjacent terrestrial and deep water habitats, along with wetlands succession and dynamics, are discussed. This course provides the base working level fundamentals in the wetlands ecology area and may also serve to update students in current developments in wetlands science. While the focus of this course is not on wetlands delineation or regulatory (Section 404) issues, regulatory personnel would benefit from the broader overview of wetlands ecology. This course provides instruction in the following topics: (a) wetland hydrology; (b) wetland vegetation; (c) major faunal populations associated with wetlands; (d) wetland plant and animal communities, ecosystem relationships, and dynamic processes; (e) hydric soils; (f) wetland classification systems, including the relationship of such wetland classifications to ecosystems classifications and parameters; (g) principles of wetlands ecology and dynamics; (h) current research in wetlands; (i) evaluation of wetland functions; (j) overview of wetland development, restoration, and constructed wetlands; and (k) open discussion and problem solving.

Prerequisites.
Nominees must be: Occupational Series: 0025, 0028, 0110, 0400, 0800, 1300; and Grade: GS-07 and above.

General Construction - QV

Control Number: **54** Length: 37 Hours

CEUs: 3.1 PDHs: 31 LUs: 31

Purpose.

This course provides the participant with the basic technical knowledge required to verify all elements of building construction, based on guide specifications, and to identify the quality assurance representative's role as it relates to construction quality management.

Description.

Through lectures, conferences, and case study sessions, the course covers the subjects of concrete and masonry, safety, exterior and interior electrical systems and components, heating, air-conditioning, plumbing, ventilation, interior and exterior finishes, structural steel and welding, mechanical insulation, sheet metal work, site utilities, soils and compaction, and roofing. An account of the purpose, meaning, and acceptance of contract quality control is included in the session on procedures for monitoring the construction quality management program. The course is directed toward proper and effective quality assurance verification of building construction. This course would be very helpful for field installation personnel who perform operation and maintenance repair on building systems and personnel who have real property inspection duties.

Prerequisites.

Nominees must be assigned (a) Occupational Series: 0801, 0802, 0808, 0809, 0810, 0830, and 0850; (b) Grade: GS-05 or above or equivalent. Students should have a current or projected assignment as a general quality assurance representative, construction representative, technician, or engineer, with quality assurance responsibilities. The fact that this course is oriented to building construction should be weighed when nominating a civil works candidate. Candidates must not have attended this or similar course within the past 5 years.

GEOSPATIAL Imagery and Remote Sensing

Control Number: **196** Length: 36 Hours

Purpose.

Instruction is designed to introduce the students to the concepts of applied remote sensing using satellite and airborne imagery. This course combines informative lectures with hands-on lab exercises that provide an understanding of remote sensing and image processing as they are used for USACE Civil Works applications. Topics include: remote sensing applications for navigation, flood damage detection, environmental missions, wetlands and waterways, regulation and permitting, real estate, recreation, survey and mapping, emergency response, and research and development.

Description.

This course provides a background of the principles of remote sensing; an overview of sensor types; processing of multispectral, hyperspectral, radar, LIDAR, and digital elevation data; obtaining image data via the USACE data acquisition protocol; spectral signatures and libraries, integrating imagery with GIS and GPS data; map projection and geo-rectification; and information extraction through image classification.

Prerequisites.

The course is intended for Civil Works personnel involved with survey and mapping, navigation, real estate, environmental, hydrology, regulation and permitting, and emergency response. Hands-on computer participation is required for this course. The course is intended for both professional and technical level classifications. It is open to selected occupational series: 0400, 0800, and 1300; and Grades: GS-07 through 12.

GIS Intermediate

Control Number: **167** Length: 24 Hours

Purpose.
This course provides students who already have basic GIS knowledge with more advanced GIS concepts and issues. The class uses a single data set to reinforce class instruction during a series of hands-on laboratory exercises.

Description.
This instruction provides knowledge of advanced GIS concepts. Specific issues addressed:
(a) Database Design. Best ways to create databases for solving specific problems and avoiding the need to later redesign so as to rectify deficiencies;
(b) Advanced Analytical Methods. Processing methods beyond basic boolean overlay and map algebra will be considered for environmental, water control, and land management applications;
(c) Error. Error types, calculation, and issues related to propagation of error during analysis.
(d) Presentation of Results. Preparation and presentation using key elements of effective GIS maps.

Prerequisites.
Students shall have previous instruction or job-related experience in the use of GIS.
Nominees should be assigned (a) Occupational Series: 0020-0029, 0100-0199, 0400-0499, 0800-0899, 1170, and 1300-1399; (b) Grade: GS-07 or above.

GIS Introduction

Control Number: **205** Length: 36 Hours
CEUs: 2.2 PDHs: 22

Purpose.
This course provides introductory instruction on the use of GIS software/hardware and various data sources to analyze Corps project operations and support decision making.

Description.
Instruction should introduce students to the concept of GIS as an integrator of geospatial data and as an analysis tool emphasizing emergency management, natural resources and environmental applications. Topics include:

(a) concept and operation of GIS, data entry, storage, display, and output;
(b) geospatial data structures and their advantages;
(c) compatibility issues;
(d) analysis, modeling, QA/QC;
(e) selection of a GIS;
(f) importation of imagery CAD files; and
(g) related USACE and Federal policies and standards.

Prerequisites.
Nominees should be assigned (a) as engineers, planners, biologists, foresters, or surveyors who use digital data to map or analyze projects; (b) Occupational Series: 0020-0029, 0100-0199, 0400-0499, 0800-0899, 1170, and 1300-1399; (c) Grade: GS-07 or above; (d) those whose job responsibilities include the analysis of spatial data and the use of digital data to map or manage Corps projects will find this course useful or (e) supervisors or others from any occupational series who are considering or are interested in the possible use of GIS in their business process.

GPS for GIS Applications

Control Number: **187** Length: 36 Hours
CEUs: 2.8 PDHs: 28

Purpose.
This course provides participants with a knowledge of the basic techniques for integrating field GPS spatial data into GIS databases. Functional elements supported by this course include: surveying, engineering, construction, navigation, master planning, and facility management.

Description.
This course covers basic GPS/GIS concepts using the Spatial Data Standards principles and applications; related cost factors; GIS database development; absolute and differential modes; survey applications and procedures; and GPS data collection, reduction, accuracy, and analysis using commercial data bases and GIS software.

Prerequisites.
The course is intended for military and civil functional elements involved with facility management, surveying, construction, navigation, mapping, real estate, FM, GIS, etc. Hands-on computer experience required for this course. The course is intended for both professional and technical level classifications. It is open to all grades/series with GPS/GIS responsibilities.

GPS Surveying and Advanced Processing

Control Number: **203** Length: 36 Hours
CEUs: 2.9 PDHs: 29

Purpose.
This course provides training for surveyors, technicians, engineers, and others who need to have the knowledge and understanding of the practical and technical aspects of surveying and data collection with GPS and DGPS techniques. The course is designed to provide students with the skill set and information on how to plan, collect, and process GPS measurements for high accuracy surveying with the use of EM 1110-1-1003, "NAVSTAR Global Positioning System Surveying."

Description.
This course addresses the planning, data acquisition, data processing and adjustments, and data analysis components of high accuracy surveying with GPS. Topics covered in this course include: GPS and DGPS Positioning; Coordinate Systems and Datums; Selecting appropriate GPS method(s) for a project; GPS field data collection; Use of NGS On-Line Positioning User Service (OPUS) Projects for data processing; GPS data processing and network adjustments; Assessing the quality of processed GPS data; Real-Time Kinematic GPS data collection and processing; and loading data into the USACE project control database (U-SMART). Students will perform hands-on high accuracy GPS data collection, processing, and network adjustment during this course.

Prerequisites.
Nominees should: (a) be selected occupational series 0800 (Engineers), 1300 (Surveyors and Technicians), geographers; (b) have hands-on computer experience.

High-Altitude Electromagnetic Pulse (HEMP) Protection for USACE Projects

Control Number: **15** Length: 28 Hours

Purpose.
This course is to increase the participant's understanding of the basic knowledge and skills necessary to assume project engineering responsibilities for HEMP projects within USACE. This course is applicable to Electrical Engineers, Mechanical Engineers, Cost Estimating Engineers, Program Managers, Program Management Specialists, Program Managers, Contracting Officers and Contracting Specialists.

Description.
This course covers the basic concepts concerning HEMP protection, testing, and project acquisition and execution activities that occur throughout the project's life cycle. Topics covered are 1) threat and sequence of events 2) topologies 3) points of entry, doors and shielding 4) testing 5) site investigation 6) challenges within the HEMP construction phase 7) terms, requirements and references 8) HEMP filters and waveguides 9) special protective measures 10) project management and acquisition 11) challenges of the HEMP design phase and 12) Challenges with HEMP project maintenance and surveillance.

Prerequisites.
None.

HVAC CONTROL SYSTEMS: DESIGN-QUALITY VERIFICATION

Control Number: **340** Length: 36 Hours
CEUs: 3.1 PDHs: 31

Purpose.
This course is intended for HVAC system designers, those responsible for developing scopes of work incorporating HVAC design for new and existing facilities, and those responsible for negotiating contracts and task orders for such work.

Description.
This course provides the HVAC control system designer with the knowledge necessary to develop a project design and specification for building-level direct digital controls capable of being interfaced with a base-wide utility monitoring and control system (UMCS). Subjects include: (1) Applied control theory (2) Control hardware, loops, systems, and drawings (3) Calculations, sizing, selections, and set-points (4) Introduction to Open systems including terminology, architectures and Open system goals, benefits and challenges (5) Introduction to LonWorks, BACnet, and Niagara Framework, including “crash courses” in the protocols and technology (6) Utility Monitoring and Control System (UMCS) Requirements and Specifications: UFGS 25 10 10, Utility Monitoring and Control System (UMCS) Front End and Integration UFGS 25 08 10, Utility Monitoring and Control System Testing (7) Building Control System requirements and UFGS-23 09 xx series of specifications including UFGS 23 09 00, Instrumentation and Control for HVAC, UFGS 23 09 23.01, LonWorks Direct Digital Control for HVAC and Other Building Control Systems, UFGS 23 09 23.02, BACnet Direct Digital Control for HVAC and Other Building Control Systems, UFGS 23 09 13, Instrumentation and Control Devices for HVAC, UFGS 23 09 93, Sequences of Operations for HVAC Controls (8) Points schedule drawing requirements (9) UMCS supervisory functions and operator interface requirements (graphical display, alarms, scheduling, trending) (10) Project implementation (11) Project quality verification and inspection (12) HVAC controls commissioning (13) Multi-vendor product support and availability (14) Base-wide UMCS/DDC planning

Prerequisites.
A degree in engineering, technology, physics, mathematics or equivalent experience.

HVAC DESIGN: BASIC

Control Number: **391** Length: 36 Hours
CEUs: 3.3 PDHs: 33

Purpose.
The purpose of this course for HVAC design engineers is to teach or refresh them in the concepts of HVAC design for DoD and other government facilities. For others such as those in positions of contracting, area or resident engineers and project engineers the course teaches the criteria requirements and need to include provisions in scopes of work for meeting criteria requirements. For students who are QA's or on-site technicians the course provides an understanding of how systems interact and function together. Because design success depends upon those not engaged in design, it is important for all if DoD is to meet criteria requirements, including public law. An overarching function of the course is to pass on unique aspects of DOD design and experiences to highlight paths to successful design.

Description.
This course presents topics on (a) heating and cooling load calculations; (b) psychrometrics; (c) duct design; (d) hydronic system design; (e) equipment selection; (f) HVAC system sizing and layout; (g)HVAC system design and construction criteria and sources; (h) building insulation and U-value determination; (i) energy conservation criteria including ASHRAE 90.1 conformance; (j) noise and vibration considerations, and (k) indoor air quality. It also provides the basis for a standard methodology of design.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0800 through 0855; (b) Grade: no limitations; (c) current or projected assignment as an HVAC design engineer or technician with limited or no design experience. The course provides an overview of HVAC design topics for individuals responsible for design, construction, or operation of HVAC systems.

HVAC SYSTEMS COMMISSIONING

Control Number: **327** Length: 36 Hours
CEUs: 3.0 PDHs: 30

Purpose.
This course provides practical technical information to fulfill construction quality verification duties for commissioning of mechanical systems. The course identifies procedures for startup, sequence of operation, and testing that pertain to mechanical equipment and repetitive deficiencies in system performance.

Description.
Through lecture, visual aids, conferences, and testing, this course presents the following mechanical HVAC subjects: commissioning of mechanical systems, cooling systems, heating systems, air side systems, and control systems. A 2-day lab experience is included where students observe proper performance testing of HVAC Systems.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0801, 0802, 0809, 0810, 0830, and 0850; (b) Grade: GS-05 through GS-12, or equivalent; (c) a current or projected position as an engineer, engineering technician, construction representative, or resident engineer with mechanical quality assurance (directly or supervised) responsibilities. Nominees should have completed the Mechanical QV PROSPECT Course, #074, or have experience in mechanical quality assurance equivalent to the basics presented therein.

HVAC Testing and Balancing Quality Verification

Control Number: **68** Length: 36 Hours
CEUs: 3.0 PDHs: 30

Purpose.
This course provides quality assurance personnel in the field with an understanding of HVAC systems functions and the testing, adjusting, and balancing relationships of the complete system.

Description.
HEATING, VENTILATING AND AIR CONDITIONING TEST AND BALANCING QUALITY VERIFICATION (HVAC TA&B-QV) The course teaches the necessary skills and knowledge to evaluate system installation and system testing, adjusting, and balancing. The course includes a 2-day lab exercise that demonstrates technical material necessary for field technicians and field engineers to perform quality verification.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0801, 0802, 0809, 0810, 0830, and 0850; (b) Grade: GS-07, WG-09, or above, or equivalent. Five years of quality assurance experience as a mechanical technician or general quality assurance representative is recommended. Students should bring pocket calculator.

HW Manifest/DOT Certification

Control Number: **223** Length: 36 Hours
CEUs: 3.2

Purpose.
This 36-hour course provides initial training regarding regulatory requirements of the Hazardous Materials Transportation Act (HMTA) and the Resource Conservation and Recovery Act (RCRA) as it applies to the generation, transportation, and disposal of HAZMAT focusing upon hazardous waste. It enables employers to certify that as required by 49 CFR 172 Subpart H, that their employees have been trained and tested on general awareness and function specific elements described below. In addition, this is an ISEERB approved and DoD approved course as per DoD 4500.9-ER. It has been reviewed by subject matter experts from DOD components and found to be suitable for more than one agency. (Note: Certain RCRA and safety related training elements required by 49 CFR 172 Subpart H and 40 CFR 265.16 are typically site-specific and must be performed on the job.)

Description.
Training topics cover the identification and classification of hazardous wastes for purposes of preparing a hazardous waste manifest and fulfilling the DOT requirements for shipping hazardous wastes. Specifically, training topics include RCRA waste classification, land disposal restrictions and notifications, generator requirements, manifesting requirements, identification of a DOT reportable quantity, use of the Hazardous Materials Table, DOT requirements for determining a shipping name, properly packaging, labeling, marking and placarding, and DOT emergency response requirements, and general security awareness training. In addition, the course addresses special EPA and DOT requirements for shipping asbestos and PCBs.

Prerequisites.
There is no prerequisite for this course, but this course can satisfy the prerequisite for PROSPECT course #429. This course is primarily targeted at persons in the following series: 0800, 0820, 0809, 0810, 0819, 0028, 0029, 0025, 0026, 0401, 1350, 1301, 0893, 0830, 1306, and 1320 (All series involved with environmental programs, including all engineers, chemist, industrial hygienists, health physicists, biologists, geologists, hydrogeologists, program managers, planners, etc.) as well as all Installation environmental staff, Civil Works Environmental Compliance Coordinators and Civil works personnel required to sign HAZMAT shipping documents and/or hazardous waste manifests. The training is designed for persons with any of the following job responsibilities: identification of proper shipping names for hazardous wastes in accordance with DOT regulations; selection of appropriate packaging, marking,

labels and placards in accordance with DOT regulations; RCRA waste identification and classification; completion or review of hazardous waste manifests and/or land disposal restriction notifications; preparation of shipping documents for used oil, asbestos and PCBs; shipping of analytical samples; loading or unloading of hazardous wastes; and transportation of hazardous materials in general.

HW MANIFEST/DOT RECERTIFICATION

Control Number: **429** Length: 16 Hours

Purpose.
This 16-hour course provides recurrent training regarding regulatory requirements of the Hazardous Materials Transportation Act (HMTA) and the Resource Conservation and Recovery Act (RCRA) as it applies to the generation, transportation, and disposal of hazmat, focusing upon hazardous waste. It enables employers to certify, as required by 49 CFR 172 Subpart H, that their employees have been trained and tested in general awareness and function-specific elements described below. In addition, this is an ISEERB approved and DoD approved course as per DoD 4500.9-R. It has been reviewed by subject matter experts from DoD components and found to be suitable for more than one agency. (Note: Certain RCRA and safety related training elements required by 49 CFR 172 Subpart H and 40 CFR 265.16 are typically site-specific and must be performed on the job.)

Description.
Training topics cover the identification and classification of hazardous wastes for purposes of preparing a hazardous waste manifest and fulfilling the DOT requirements for shipping hazardous wastes. Specifically, training topics include RCRA waste classification; land disposal restrictions and notification; manifesting requirements; identification of a DOT Reportable Quantity; use of the Hazardous Materials Table; and DOT requirements for determining a shipping name, proper packaging, labeling, marking, placarding, DOT emergency response requirements, and general security awareness. In addition, the course addresses special EPA and DOT requirements for shipping asbestos and PCBs. This course does not address Class 7, Radioactive Waste. Students needing recertification to ship radioactive waste are referred to PROSPECT course #430.

Prerequisites.
This is a refresher course. Students must have previously completed either PROSPECT course #223 or another initial training as specified under 49 CFR 172, Subpart H. This course is primarily targeted at persons in the following series: 0800, 0820, 0809, 0810, 0819, 0028, 0029, 0025, 0026, 0401, 1350, 1301, 0893, 0830, 1306, and 1320. (All series involved with environmental programs including engineers, chemists, industrial hygienists, health physicists, biologists, geologists, hydrogeologists, program managers, planners, etc.) as well as all Installation environmental staff, Civil Works Environmental Compliance Coordinators, and Civil Works personnel required to sign hazmat shipping documents and/or hazardous waste manifests. The

training is designed for persons with any of the following job responsibilities: identification of proper shipping names for hazardous waste in accordance with DOT regulations; selection of appropriate packaging, markings, labels and placards in accordance with DOT regulations; RCRA waste identification and classification; completion or review of hazardous waste manifests and/or land disposal restriction notifications; preparation of shipping documents for used oil, asbestos and PCBs; shipping of analytical samples; or hazardous wastes; and transportation of hazardous materials in general.

Hydraulic Steel Structures - Overview

Control Number: **343** Length: 36 Hours
CEUs: 3.2 PDHs: 32

Purpose.
This course is designed to provide training on the inspection, evaluation, and repair of hydraulic steel structures, that includes the identification of critical members and connections. Nondestructive testing techniques that may be used during periodic inspections or detailed structural inspections are discussed. Guidance is provided on material testing to determine the chemistry, strength, ductility, hardness, and toughness of the base and weld metal. Analyses methods that can be used to determine structure safety, safe inspection intervals, and expected remaining life of the structure with given operational demands are presented.

Description.
This course is an overview of the USACE requirements for design, inspection, and evaluation of hydraulic steel structures(HSS). It is designed to provide guidance in the best practices for maintenance, repair, or replacement of HSS. Nondestructive testing techniques that may be used during periodic inspections or detailed structural inspections are discussed. Guidance is provided on material testing to determine the chemistry, strength, ductility, hardness, and toughness of the base and weld metal. Analyses methods that can be used to determine structure safety, safe inspection intervals, and expected remaining life of the structure with given operational demands are presented.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0800; (b) Grade: GS-07 or above and WG as appropriate; and (c) This course is designed for all personnel involved in the design, fabrication, inspection, and repair of USACE hydraulic steel structures.

Hydraulics and Hydrology for Dam Safety Studies

Control Number: **320** Length: 36 Hours

Purpose.
The objective of the course is for participants to perform hydrologic and hydraulic modeling in support of Dam Safety studies. Topics presented will include: Development of Probable Maximum Precipitation (PMP); Using GIS to Develop a Hydrologic Model; Hydrologic Modeling for PMP/PMF Events; Developing Dam Breach Parameters; Dam Breaching Analysis using HEC-HMS and HEC-RAS; Unsteady Flow Modeling with HEC-RAS; using HEC-GeoRAS and RAS Mapper for Inundation Mapping; and Consequence Modeling. Each participant will have the opportunity to prepare model input and analyze model output during course workshops.

Description.
Through a series of lectures and hands-on workshops, the students will learn about development of extreme storm events and hydrologic and hydraulic analysis methods using HEC-HMS and HEC-RAS software to simulate inflow design floods to assess spillway adequacy, and to evaluate dam-break consequences. Other topics will include: severe storm magnitude and sequence analysis; hydrologic simulation of inflow to dam and downstream tributaries; spillway sizing and operation; hydraulic calculations of flow through dam outlets; estimating dam breach parameters; dam breaching analysis; hydraulic routing of dam break flood waves; how to solve model stability problems when performing a dam break analysis; inundation mapping; and consequence modeling.

Prerequisites.
Nominees must be assigned (a) Occupational series: Selected 0800 and 1300 (b) Grade: GS-07 or above (c) Prior courses: Basic HEC-HMS (#178) and HEC-RAS (#114) or equivalent knowledge; and (d) Familiarity working in a Windows-based computer system environment. Basic HEC-HMS and HEC-RAS input will not be covered. Prior experience with unsteady flow routing is recommended.

HYDROGRAPHIC SURVEY TECHNIQUES

Control Number: **56** Length: 40 Hours

CEUs: 3.0 PDHs: 30

Purpose.

This course provides participants with the knowledge and technology required in performing hydrographic surveys in support of USACE navigation, dredging, surveying, coastal engineering, inland waterways and related marine construction activities. The course is designed to provide engineers, engineer technicians, field survey technicians, survey vessel operators, and A-E contract administration personnel with a technical familiarization of the criteria, standards, and specifications in EM 1110-2-1003, "Hydrographic Surveying", and applying this manual in performing in-house and contracted hydrographic surveys.

Description.

This course provides instruction on the process and technology used to conduct hydrographic surveys. The instructional program emphasizes the processes required to most effectively perform hydrographic surveys. The major subject areas covered include: hydrography, survey datums, depth and position determination, horizontal and vertical error estimation and analysis, tidal theory, computer hardware and software used for automated hydrographic surveys, fluff measurement, volume computations, multi-beam swath and multitransducer sweep systems, GPS positioning, LIDAR, and project planning. Some horizontal and vertical measurement concepts and techniques will be demonstrated in the field.

Prerequisites.

Nominees should be assigned (a) Occupational Series: 0800 (engineers, engineer technicians), 0817 and 1300 (field survey technicians), and 0095 and 1100 (A-E contract administration personnel); (b) Grade: GS-05 or above. Waivers will be considered.

HYDROLOGIC ANALYSIS FOR ECOSYSTEM RESTORATION

Control Number: **161** Length: 36 Hours

Purpose.

The primary objectives of the course are to provide participants with an understanding of the role of hydrologic engineering in ecosystem restoration studies and to provide experience in the application of several software tools that can be used to perform the hydrologic analyses common in restoration planning, evaluation and design.

Description.

Hydrologic and hydraulic processes generally control the creation, restoration, maintenance, size, and function of rivers and aquatic and terrestrial floodplain ecosystems. They not only affect the quantity and quality of water available but also influence soil conditions, nutrient availability, salinity, and the flora and fauna that develop along rivers and in wetlands. In riverine ecosystems the quantity of water available, its seasonal timing and duration, river alignment and exposure are some of the principal considerations influencing habitat and wildlife. This course will focus on hydrologic and hydraulic processes and in analyses that apply to ecosystem restoration. The course agenda includes a series of increasingly difficult topics and workshops, beginning with principles of hydrology, ecology, and statistics and advancing to time series analysis, hydrologic alteration, ecosystem flow definition, ecosystem functions modeling, river hydraulics, and sedimentation. Over a third of the week will be dedicated to software demonstrations and workshops where course participants gain experience using a number of different software tools.

Prerequisites.

Nominees must be assigned (a) Occupational Series: Selected 800 and 400 series, 028, 819, 184, 101, 401, and 1301; (b) Grade GS-09 and above. Nominees should be water control managers, hydrologists, civil engineers, environmental specialists, biologists, ecologists, economists, sociologists, or study managers.

Hydrologic Modeling with HEC-HMS

Control Number: **178** Length: 36 Hours

Purpose.
This course provides basic instruction on the Corps' Hydrologic Modeling System (HEC-HMS). Workshops provide hands-on reinforcement of scientific and engineering principles presented in lectures. Students will be prepared to work on typical flood risk management studies after completing the course. These same skills are also used as a starting point for studies in ecosystem restoration, forecasting, and navigation.

Description.
The course covers basic hydrologic engineering techniques for precipitation-runoff analysis to support flood risk management studies. Topics include: basin average rainfall estimation, infiltration determination, unit hydrographs, streamflow routing, and methods for modeling runoff throughout a watershed composed of multiple subbasins and river reaches. Parameter estimation using optimization and reservoir outflow modeling are also included. Workshops provide hands-on reinforcement for these areas while following from start to finish a sample reservoir study typical of many flood risk management projects. Scientific and engineering principles of hydrologic studies are presented and HEC-HMS is implemented as a tool.

Prerequisites.
Nominees should have completed a college-level hydrology course. Nominees must be assigned (a) Occupational Series: 0400, 0800, and 1300; (b) Grade: GS-07 or above.

Instrumentation and Performance Monitoring of Dams and Levees

Control Number: **26** Length: 24 Hours

Purpose.
This course is to provide dam and levee safety professionals formal training in the requirements and best practices of dam and levee instrumentation and performance monitoring programs with emphasis on the importance of timely data collection, evaluation, and reporting. Through instruction, discussion, workshops, and hands-on exercises, students will gain the technical expertise needed to develop an appropriate instrumentation and monitoring program based on potential failure modes analysis.

Description.
The course will cover all the aspects of the instrumentation and monitoring of dams and levees through lectures, case histories, group discussions, workshops, field visit, and practical exercises.
The course will include: program development and considerations, visual monitoring discussions, common instrumentation and their applications, installation considerations, data collection frequencies, data management, threshold establishment, automated data acquisition systems and software, data processing and evaluation, and reporting requirements. Hands-on field exercises will include example instruments and manual readings of instruments in the field as well as data processing and plotting. Hands-on group activities will include “developing instrumentation monitoring program considerations” exercises, as well as data interpretation and evaluation exercises.

Prerequisites.
Nominee must be assigned to (a) Occupational Series: Selected 0800 and 1350. (b) GS-07 or above. Nominees must have current or projected responsibilities in instrumentation program development, data collection, processing and plotting, or data evaluation. Nominees are recommended to already have taken the general “Dam Safety” or “Levee Safety” PROSPECT course or have 3 years of work experience with dams or levees. Attendees should bring proper attire for field visit, e.g., rain gear, comfortable shoes (no open toed shoes).

Interpretive Services

Control Number: **72** Length: 32 Hours
CEUs: 1.9

Purpose.
This course is intended for those employees in natural resources management career fields and others who have interpretation, outreach, or related job responsibilities. The course is designed to develop understanding and skills that will help park rangers, visitor center managers, and other resource specialists to implement the Corps Interpretive Services and Outreach Program at their projects.

Description.
After completing the course, the student should be able to develop and maintain an effective interpretive services and outreach program. Topics covered include (a) definitions of interpretation; (b) USACE goals of interpretation; (c) how to develop interpretive programs, panels, exhibits, and self-guided trails; d) resources and demonstrations of water safety, environmental education, and STEM programs; and e) how to create written outreach materials such as news releases and social media. A hands-on practical application project is included in the course.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 023, 025, 026, 028 and 1001 as well as all the 400 series; (b) Grade: GS-05 or above; (c) employees in job series other than those listed above who have interpretation or outreach as part of their job responsibilities.

Levee Inspection

Control Number: **36** Length: 24 Hours
CEUs: 1.9 PDHs: 19

Purpose.
Train U.S. Army Corps of Engineers (USACE) staff to include managers, engineers, geologists, and technicians on aspects of the USACE levee inspection procedures. The course is also available to non-USACE participants interested or involved with the USACE levee safety inspections.
The course intent is to teach new levee inspectors levee inspections using USACE criteria are conducted. The course will focus on teaching inspectors how to use the inspection checklist, software, and tools required to complete an inspection. The course will also inform students how levee inspections fit within the Levee Safety Program's risk informed decision making process and who should participate during the inspection process. Levee inspection steps covered throughout this course include planning and preparing for inspections, executing safe inspections, completing an inspection report using the proper software, documenting inspection data in the National Levee Database, and effectively communicating results with partners, sponsors, and stakeholders.

Description.
Lectures, case histories, field visits and structured classroom exercises will be employed to familiarize participants with all aspects of levee inspections. The course is structured around the entire life-cycle of the inspection process and throughout the week, inspection procedures are performed by students, in a hands-on environment, on an actual levee in the area. Students will learn the background of inspection methodology, proper usage of the inspection tools and software, and will complete a sample inspection report. Dress is business casual and students should plan to dress accordingly during the field inspection.

Prerequisites.
Occupational series: Selected 0100, 0400, 0800, 0900, 1000, 1300, and 1500
Grade: GS and WG, as appropriate, GS05 or above
This course is intended for all personnel involved in levee safety inspections. No prior knowledge of this topic is required to attend.

Levee Safety Fundamentals

Control Number: **30** Length: 24 Hours

Purpose.
This course trains USACE staff to include managers, engineers, geologists, technicians, economists, planners, and public affairs on the main aspects of the USACE Levee Safety Program. The course is also open to non-USACE participants interested or involved with the USACE Levee Safety Program.
The course intent is to present an overview of the USACE Levee Safety Program to include history, levee system facts and functions, and use of risk-informed decision making for managing levees. The course will focus on Levee Safety Program elements that achieve the USACE "life safety being paramount" mission. Levee Safety Program elements covered throughout the course include inspections, leveed area inundation scenarios, risk assessments and portfolio management, roles and responsibilities, risk reduction actions, stakeholders and partners, emergency planning and response, risk management and risk communication.

Description.
Lectures, case histories, field visits and structured classroom exercises will be employed to familiarize participants with all aspects of the USACE Levee Safety Program. The course is structured around a basic conceptual representation of levee safety as comprised of the levee system and associated leveed area. A levee system is inclusive of earthen embankments or floodwalls, and all appurtenant structures which are interconnected and necessary to ensure exclusion of floodwater from a defined area, referred to as the leveed area. The course will cover concepts that are considered during risk assessments for levee systems, such as: hazard-frequency and magnitude of flood loading; performance – embankment/walls and other structures behavior under exposure and loading; characteristics of leveed area including persons and property; vulnerability – potential for life loss, economic and environmental impacts; and consequences during a levee breach or overtopping. Presentations, video modules, case histories, and class exercises, including a field inspection, are used to effectively present the approach to the successful monitoring and evaluation of USACE levees.

Prerequisites.
Nominee must be assigned:
(a) Occupational Series: Selected 0100, 0400, 0800, 0900, 1000, 1300, 1500
(b) Grade: GS and WG, as appropriate, GS05 or above
This course is intended for all personnel, including non-Federal employees, interested in or involved in identifying levee safety risk, and developing risk reduction actions and their associated implementation. No prior knowledge of this topic is required to attend this class.

LiDAR Fundamentals

Control Number: **296** Length: 36 Hours

Purpose.
This course provides engineers, cartographers, surveyors, planners, project managers and engineering technicians with an overview of the latest techniques used in acquiring and processing high-resolution terrain data derived from LiDAR and aerial imagery. These data are used for planning, designing and construction of civil works and military and environmental projects. Emphasis is placed on technology, acquisition, management and exploitation of LiDAR and aerial imagery data sets. Basic photogrammetric and LiDAR principles are reviewed and discussed. Also discussed are A-E contracting for LiDAR and aerial photography services--this includes related cost estimating, contract administration, and quality control/quality assurance. The course provides several demonstrations as well as significant hands-on experience with equipment and in the computer laboratory.

Description.
This course will discuss the principles of LiDAR and aerial imagery, explore the current state of technology, and discuss various applications where LiDAR and aerial imagery is used, with real-world project and data examples. Data acquisition and processing will be discussed, including planning and conduct their own surveys and the necessary post-processing to create the required data products to obtain a better understanding of LiDAR and aerial imagery data acquisition and manipulation. Furthermore, detailed information will be explored related to contracting requirements and data management and dissemination.

Prerequisites.
Nominees must be assigned Occupational Series: 0800, 0150, 1100, 1300. This course involves hands-on application of PC-based software using standard software computational/translation packages. Therefore, nominees must have a general knowledge of PC operation.

LUBRICATION OF MECHANICAL EQUIPMENT

Control Number: **412** Length: 32 Hours

Purpose.
This course is designed primarily for USACE personnel who have hydropower, navigation lock & dam, and spillway maintenance responsibilities; such as supervisors, mechanic crew foremen, engineers, powerhouse mechanics, and technicians. It provides a comprehensive understanding of lubrication issues at hydropower facilities, navigation locks, and spillways. It may also be of benefit to design engineers who need a broader knowledge of lubricant characteristics and performance.

Description.
Through lectures, visual aids, and case study sessions, this course covers the following subjects: (a) friction, wear and lubrication fundamentals; (b) lubricant formulation; (c) lubrication additives and their function; (d) essential characteristics of lubricants; (e) lubricant sampling, testing, and interpretation of test data; (f) greaseless bearings and their application; (g) compatibility of lubricating oils; (h) oil purification; (i) oil filtration and contamination control; (j) lubricating greases - classification, formulation and application; (k) compatibility of greases; (l) hydraulic fluids; (m) turbine oils; (n) gear boxes and open gear lubrication; (o) environmentally acceptable lubricants; (p) wire rope and chain lubrication; (q) incorporation of EOP's and sustainability into mechanical lubrication and (r) open forum discussion on best practices and lessons learned . The course includes a tour of a USACE powerhouse and a navigation lock and dam.

Prerequisites.
Nominees must be assigned in GS or WG Occupational Series as engineers, supervisors, mechanic crew foremen, mechanics, and technicians at USACE facilities with responsibility for operations and maintenance. Exceptions may include design engineers, and personnel involved with design, planning and management in hydropower and navigation lock and dam related organizations.

Maintenance and Rehabilitation of Pavements

Control Number: **50** Length: 36 Hours
CEUs: 2.9 PDHs: 29

Purpose.
This course teaches methods and techniques for maintenance and rehabilitation of flexible, rigid, and unsurfaced pavements.

Description.
This course focuses on practical and effective maintenance and repair methods and techniques. The course is composed of lectures, videos, handout materials, and field demonstrations. Maintenance and rehabilitation topics of both flexible and rigid pavements are covered including repair techniques, material properties and mix design, surface maintenance options, joint and crack sealants, recycling, production, placement, compaction, and case studies. Additionally, a background in lab tests and field identification of soils and bases materials, maintenance and repair of drainage structures, dust control, and gravel roads will be provided.

Prerequisites.
Nominees must be assigned to an activity with responsibility for maintenance, repair, and improvements of installation facilities (e.g., Army facilities engineer, Air Force base civil engineer) or Corps of Engineers field operations and maintenance activities. This course is designed for maintenance personnel and interested technical designstaff.

Management of Hydropower - O & M

Control Number: **376** Length: 36 Hours
CEUs: 3.1 PDHs: 31

Purpose.
Through the use of subject matter experts in a lecture format, this course covers the management of Corps of Engineers hydroelectric generating stations. It includes the descriptions of powerhouse equipment design and construction for structural, mechanical, and electrical systems. It considers environmental requirements, power system accounting, maintenance management, power system operation, safety consideration, material flow, benchmarking, and control systems. Prospective students should be managers or prospective managers of Corps of Engineers hydroelectric assets.

Description.
This course is designed primarily for civil works managers, supervisors, engineers, and technicians who have hydropower operations and maintenance responsibilities. It provides a comprehensive understanding of the management of the hydropower facilities. It may also be of benefit to planners, design engineers, hydrologists, and Reservoir Control Center staff who need an understanding of hydropower O&M from the field level perspective.

Prerequisites.
We have not specified prerequisites for this course except for the background described in sections 9 and 10.

Master Planning Advanced Techniques

Control Number: **952** Length: 28 Hours
CEUs: 3.0 PDHs: 30 LUs: 30 CMs: 30 ACE: 2.0

Purpose.
Through the actual preparation of an Area Development Plan (ADP), this course provides planners the collaborative planning skills needed to conduct and lead complex master planning efforts that address overall installation planning, area development planning, and form-base planning. In order to comply with Public Law (National Defense Authorization Acts of 2013 and 2014) and with DoD UFC 2-100-01, Installation Master Planning, DoD planners need to understand how to prepare an ADP.

Description.
This course teaches planning techniques described in the upcoming new UFC on Area Development Planning. The course provides detailed instruction on how to implement principles for area development planning set forth in DoD and NASA planning guidance. It also provides an overview of comprehensive planning techniques needed to integrate various planning considerations that must be comprehensively addressed in the development of Army, Navy, Air Force, Marine Corps, Coast Guard, and even NASA installations and communities. Through intensive, hands on training, students will learn how to prepare a UFC-compliant ADP. Students will learn how to incorporate planning charrette techniques to develop the ADP using a real world-planning problem at a federal installation. Students will also learn how to write a clear planning vision, research existing documents, conduct a site analysis, prepare and evaluate alternatives, develop a business case, and detail a preferred alternative that includes an illustrative plan, regulating plan, and phasing plans. Through the exercise, students will be faced with various planning considerations and will be required to holistically integrate these considerations into a comprehensive solution that meets mission requirements and provides for a quality urban design solution that is sustainable and compatible with the installation's vision for real property development. Students will receive copies of two classic planning textbooks and they will need to incorporate key lessons from those texts into the development of the ADP. A half-day field trip is part of the schedule so students should be prepared to walk and they should plan for appropriate and comfortable attire. Accommodations for students unable to walk will be made as needed, please contact ULC prior to the course if accommodations are needed. Students do not need to bring a laptop to the course. To receive a certificate of completion, students are required to attend the entire course so leaving early is not allowed per ULC policy.

Prerequisites.
Master Planning Principles (Course 75) is a prerequisite since Course 952 focuses on how to integrate those planning principles into an ADP. The course is appropriate for all DoD staff and contractors that deal with master planning. Planning staff from other federal agencies will also benefit from participation in the course. The course is also open to the general public. The class is also appropriate for planners in cities and towns and meets AICP certification for continuing education.

Master Planning Energy and Sustainability

Control Number: **258** Length: 28 Hours
CEUs: 2.3 PDHs: 23 LUs: 23 CMs: 23 ACE: 2.0

Purpose.
This course focuses on how to apply principles of resiliency, sustainability, and energy efficiency in the planning and development of installations. These principles are consistent with DoD policy on the development of Installation Energy and Water Plans that require energy and water efficiency integrated into planning processes for all installations, DoD commitments to following industry standards like ASHRAE 189-2, and Public Laws on master planning. This course does not focus on detailed engineering and design but helps students recognize that master plans set the standard from which all projects (including energy projects) are developed.

Description.
This course provides a unique learning environment involving lectures, studio-based applied instruction, and educational field trips. These teaching methods help students understand and identify appropriate sustainability, resiliency, and energy efficiency planning practices needed to meet legal and policy requirements to include the National Defense Authorization Acts of 2013 and 2014 and UFC 2-100-01, Installation Master Planning. Students will gain knowledge in how to implement master planning processes and identify metrics to assure that relevant sustainability principles are integrated into the installation development process through programming, design and construction. Through an intensive hands-on workshop, students will use design studio techniques to apply these principles using a transferable case study model. Students will learn about key planning-level strategies for reducing energy and water use, minimizing waste generation, and mitigating stormwater runoff. They will learn how to integrate these strategies into a Energy, Water or Sustainability Component Planning documents and how to develop metrics using modeling programs that quantify the economic and environmental benefits of these strategies. A half-day field trip is part of the schedule so students should be prepared to walk and they should plan to wear appropriate and comfortable attire. Accommodations for students unable to walk will be made as needed, please contact ULC prior to the course if accommodations are needed. Students should bring a laptop to the course and be prepared to perform basic energy and sustainability calculations. To receive a certificate of completion, students are required to attend the entire course so leaving early is not allowed by ULC policy.

Prerequisites.
Master Planning Principles (Course 75) while not a prerequisite, is highly recommended to completed prior to the class since the class discusses how to integrate those planning principles into an Energy and Water Planning efforts. The course is appropriate for all DoD staff and contractors that deal with master planning. Planning staff from other federal agencies will also benefit from participation in the course. The course is also open to the general public. Students taking this course should also take MP 163 - Master Planning Resiliency and Sustainability since that course provides in-depth, hands-on training on using the USACE-developed Net Zero Planner tool to develop metrics needed to prepare an SCP. The class is also appropriate for planners in cities and towns and meets AICP certification for continuing education.

Master Planning Practices

Control Number: **241** Length: 28 Hours
CEUs: 2.2 PDHs: 22 LUs: 22 CMs: 22 ACE: 2.0

Purpose.
This course focuses on the practices needed to effectively manage a master planning program. These practices include accomplishing planning efforts, contracting for planning services, balancing contract efforts with in-house capabilities, evaluating work, and ensuring stakeholder involvement.

Description.
The course begins with a brief overview of the master planning policies and products required by UFC 2-100.01, Installation Master Planning. The course then teaches the practice aspects of master planning in four sections. First, students will learn about individual and collective roles and responsibilities for project managers, stakeholders, planning boards and planning support centers. This will include segments on planning law and ethics where students will understand the legal and ethical aspects of planning and how the history of legal precedence and ethical actions impacts planning practices. It will also include a segment on the mechanics and opportunities for professional development for planners. Students will recognize that planning is a profession that requires continuing education and training. Students will learn about potential career paths and training opportunities. They will understand the AICP certification process. Second, students will learn in an interactive hands-on setting how to ensure quality in the planning process through the development of effective statements of work, the preparation of reasonable government working estimates, and the appropriate evaluation of master planning products (e.g. Vision Plans, Installation Development Plans, Area Development Plans, Planning Standards, Development Programs, and Plan Summaries, Sustainability Component Plans, Nodal Development Plans, and Customer Concept Documents). Third, students will learn how design agents can effectively execute work for customers through appropriate acquisition strategies that may include in-house efforts, jointly with A/E firms, or by contracting all the effort to A/E firms. Through hand-on exercises, this section will also teach students how to manage the A/E selection process by crafting appropriate solicitation notices, evaluating proposals, interviewing firms, and making the selection. Fourth, the course will introduce students to data collection and management strategies currently in use across the DoD to include the appropriate use of standards and standard designs. A half-day field trip is part of the schedule so students should be prepared to walk and they should plan to wear appropriate and comfortable attire.

Accommodations for students unable to walk will be made as needed, please contact ULC prior to the course if accommodations are needed. Students need to bring a laptop to the course. To receive a certificate of completion, students are required to attend the entire course so leaving early is not allowed per ULC policy.

Prerequisites.

Master Planning Principles (Course 75) is a not a prerequisite but is recommended since this course focuses on day-to-day practices needed to implement the principles discussed in Course 75. The course is appropriate for all DoD staff and contractors that deal with master planning. Planning staff from other federal agencies will also benefit from participation in the course. The class is also appropriate for planners in cities and towns and meets AICP certification for continuing education.

Master Planning Principles

Control Number: **75** Length: 32 Hours

CEUs: 3.0 PDHs: 30 LUs: 30 CMs: 30 ACE: 2.0

Purpose.

This course is an introduction to master planning principles, processes, and products as prescribed in UFC 2-100-01, Master Planning. The purpose of the course is to make planners more effective by providing them an overview of the fundamentals of master planning as it is practiced by the Army and other DoD and federal agencies as well as by local cities and towns. For non-planners, this course provides an overview of the fundamentals of master planning. General planning principles covered in this course apply to the U.S. Army Reserves and other military services, the Civil Works Community, other Government agencies, and the civilian planning community. Participants should be aware that this course is focused on planning and not programming DD 1391 preparation and the design and construction of facilities. Since planning defines what is to be programmed, it is essential that programmers understand how the planning process is formulated, its integration with NEPA process, its consideration of sustainability and energy factors, and how the process guides all development.

Description.

Through lectures, case studies, group interaction, field trips and practical exercises, this course will (a) provide an overview of fundamental strategies for resilient, sustainable and energy efficient master plans cited in Army and DoD Master Planning policies; (b) present the planning process, methodology, and products used to create effective master plans and explain how the process is applied to installation master planning; (c) emphasize that master planning is a professional capability requiring close collaboration and facilitation with stakeholders, and (d) present an overview of sustainable development concepts. This class provides the fundamentals of the practice of planning and gives students the foundational understanding needed to engage in effective master planning of installations and federal properties. A half-day field trip is part of the schedule so students should be prepared to walk and they should plan to wear appropriate and comfortable attire. Accommodations for students unable to walk will be made as needed, please contact ULC prior to the course if accommodations are needed. Students do not need to bring a laptop to the course. To receive a certificate of completion, students are required to attend the entire course so leaving early is not allowed by ULC policy.

Prerequisites.

This course has no prerequisite. It is appropriate for planners, architects, landscape architects, project

managers, engineers, historic preservation experts, and Real Property Specialists working at Army and DoD installations, Corps of Engineers districts, NASA centers, other federal agencies, the general public, and the consulting community. Nominees serving as federal employees must be assigned to GS-05 or above and associated with installation master planning and management support functions at DoD installations, MACOMs, MSCs, USAR, RSCs, USACE divisions/districts, and/or a supporting contractor or equivalent experience with other DoD and federal agencies. Work in other areas such as historical preservation, environmental management, and project management would serve as suitable experience. The class is also appropriate for planners in cities and towns and meets AICP certification for continuing education.

Master Planning Programming and Siting

Control Number: **326** Length: 28 Hours

CEUs: 1.9 LUs: 19 CMs: 19 ACE: 2.0

Purpose.

This class provides a unique opportunity to learn methods used to implement a master plan from programming to project siting and implementation of form base planning. This class will include training in process of preparing an Area Development Plan Execution Plan and using relevant planning tools to conduct planning studies, requirements analysis, stationing impacts, etc. Through application and instruction, students will gain further understanding in the use of these tools and linkage to project programming. The students will also gain knowledge in the detailed process of siting projects in accordance with the master plan. this includes use of form based coding, and site development, as well as how these siting criteria are reflected in programming documentation.

Description.

Students will gain a thorough understanding of various master planning execution and sit development techniques needed to implement the master plan while learning how to comply with public laws on installation planning and DoD guidance. Students will learn how to implement recommendations of the plan to include preparation of the Area Development Execution Plan and associated Investment Strategies as well as siting. Students will learn how to determine real property requirements and the impact to the installation's Real Property Master Plan. They will also learn how to prioritize projects and develop planning-level cost estimates needed to prepare basic life cycle cost analysis summaries. This course also includes an overview of how the Army stations units, how to develop Real Property requirements, and how to assess the impacts of stationing plans. The class also covers project siting and site development and how to translate siting criteria into programming documentation. Students should know, this class does not include instruction on how to prepare a DD form 1391. Students need to bring a laptop to the course. To receive a certificate of completion, students are required to attend the entire course so leaving early is not allowed by ULC policy.

Prerequisites.

While there are no prerequsites for this this class, Master Planning Principles (Course 75) is highly recommended to take before attending this class. Course 326 focuses on how to integrate those planning principles into an Area Development Execution Plan and project siting. The course is appropriate for all DoD staff and contractors that deal with master planning. Planning staff from other federal agencies will also benefit from

participation in the course. The course is also open to the general public. The class is also appropriate for planners in cities and towns and meets AICP certification for continuing education.

Master Planning Sustainability & Resiliency

Control Number: **163** Length: 24 Hours

CEUs: 3.0 PDHs: 20 LUs: 20 CMs: 20

Purpose.

This course connects the key elements of installation energy/water planning and master planning through use of modeling tools. The goal of the course is to make planners more effective by providing them with an understanding of the role of master planning in achieving sustainability and resiliency goals, by learning how to quantify impacts. Students will learn how to use the USACE developed SMPl/Net Zero Planner tool to identify resilient solutions in conjunction with master planning. For non-planners, this course provides linkages to achieve sustainable, resilient installations and allows professionals to use automated modeling tools to quantify impacts.

Description.

Through lectures, case studies, group interaction, and practical exercises, this course will (a) provide an overview of sustainable, energy efficient, resilient master planning principles as cited in Army and DoD Master Planning policies; (b) through application modeling techniques, demonstrate and understand to quantify energy and water reliability impacts and explain how it impacts installation master planning; (c) emphasize that master planning is a professional capability requiring close collaboration and facilitation with stakeholders, and (d) present an overview of sustainable development and resiliency concepts. The class provides the knowledge and modeling techniques necessary to produce a Sustainability Component Plan/Installation energy Plan as a complement to a master plan. This class provides the participants with the knowledge and skills needed to engage in effective sustainable, resilient master planning for installations and other federal properties.

Prerequisites.

This course has no prerequisite. While this course builds on knowledge from Course 258 (Master Planning Energy & Sustainability), it is not necessary to have completed that course. It is appropriate for planners, architects, landscape architects, project managers, engineers, historic preservation experts, and Real Property Specialists working at Army and DoD installations, Corps of Engineers districts, NASA centers, other federal agencies, the general public, and the consulting community. Nominees serving as federal employees must be assigned to GS-05 or above and associated with installation master planning and management support functions at DoD installations, MACOMs, MSCs, USAR, RSCs, USACE divisions/districts, and/or a supporting contractor or equivalent experience with other DoD and federal agencies. Work in other areas such as historical preservation, environmental management, and

project management would serve as suitable experience. The class is also appropriate for planners in cities and towns and meets AICP certification for continuing education. Students need to bring a laptop to the course. To receive a certificate of completion, students are required to attend the entire course so leaving early is not allowed by ULC policy.

Master Planning Sustainable Historic Structures

Control Number: **392** Length: 24 Hours

CEUs: 2.0 PDHs: 20 LUs: 20 CMs: 20 ACE: 1.0

Purpose.

This course focuses on the planning and design of installation buildings as it pertains to the sustainable/resilient reuse of historic structures and landscapes. The appropriate management and consideration of historic resources is required per public law (National Defense Authorization Acts of 2013 and 2014) and DoD UFC 2-100-01, Installation Master Planning. Further, with DoD and Army focus on footprint reduction and reuse, smart repurposing of these historic structures and landscapes are essential. This course instructs planners, historic preservation experts, and designers on the appropriate implementation of the UFC 2-100-01 planning strategy that addresses natural, cultural, and historic resource management. The course also provides instruction in identifying unique characteristics, legal requirements, procedures, technical knowledge, and skills necessary to administer, maintain, repair, and repurpose historic properties in conjunction with the master planning policies of the Army and DoD

Description.

The course begins with an overview of installation master planning and describes how consideration of the appropriate use of historic structures should be included in the planning process. It describes the transition from planning to design implementation. The course then covers sustainability and resiliency and reuse strategies for historic structures as these applicable at the scale. The course also provides an overview of relevant guidance to include laws and regulations, as well as Secretary of the Interior standards, criteria, and guidance. The course also covers the identification and documentation of historic landscapes, which includes buildings and open spaces. Students will be engaged in lecture, carefully crafted hands-on exercises, and field visits to examples of successful historic preservation and sustainable reuse. In addition, through the use of multiple case studies, students will learn how to use innovative methods in order to reuse historic structures since these structures offer unique ways to meet energy and water saving goals and create new opportunities for footprint reduction. A half-day field trip is part of the schedule so students should be prepared to walk and they should plan for appropriate and comfortable attire. Accommodations for students unable to walk will be made as needed, please contact ULC prior to the course if accommodations are needed. Students do not need to bring a laptop to the course. To receive a certificate of completion, students are required to attend the entire course so leaving early is not allowed by ULC policy.

Prerequisites.
This course has no prerequisite. It is appropriate for planners, architects, landscape architects, project managers, engineers, historic preservation experts, resource managers, and Real Property Specialists working at Army and DoD installations, Corps of Engineers districts, NASA centers, other federal agencies, the general public, and the consulting community. Nominees serving as federal employees must be assigned (a) Occupational Series: 0020, 0023, 0025, 0028, 0170, 0193, 0301, 0341, 0342, 0343, 0401, 0408, 0800, 1005, 1008, 1170, 1171, 1173, 1176, 1300, 1301, 1640, 1910, 1960, or other series with cultural resource responsibilities; and (b) Grade: GS-07 or above. The class is also appropriate for planners in cities and towns and meets AICP certification for continuing education.

Master Planning Visualization Techniques

Control Number: **948** Length: 32 Hours
CEUs: 2.2 LUs: 22 CMs: 22 ACE: 1.0

Purpose.
This course provides master planners training in planning visualization techniques. The course objectives will be implemented through the use of Sketch-up and Adobe Photoshop as tools to assist in military installation planning. The training applies to the planning and development of local cities and towns as well since visualization skills are essential in building successful plans

Description.
Students will learn how the challenge of installation planning requires planners to understand the broad context of community planning, the concept of scale, the massing of facilities, the use of appropriate landscaping, architectural compatibility, and applicable force protection and Critical Infrastructure Assurance methods. This understanding is more important now in order to comply with public laws (National Defense Authorization Acts of 2013 and 2014) and DoD UFCs addressing master planning. Further, with an increasing emphasis on district level planning and urban design at federal installations, it is essential to visualize the entire space that is being created. In part I of the course, students will learn how to use Adobe Photoshop to develop compelling illustrative plans. In part II of the course, students will learn how to use visualization tools such as Google Sketch-up and Google Earth to convert their illustrative plans into annotated three-dimensional models and how to develop fly-through simulations of these models. In part III of the course, students will learn how to use Adobe Photoshop to create photorealistic renderings. The course is conducted primarily in a computer lab so that students will have extended opportunities for hands-on instruction. Students will leave with knowledge of the fundamentals of Google Sketch-up and Adobe Photoshop and how to use these tools in the planning and development of resilient communities. A field trip is part of the schedule so students should be prepared to walk and they should plan to wear appropriate and comfortable attire. Accommodations for students unable to walk will be made as needed, please contact ULC prior to the course if accommodations are needed. Students do not need to bring a laptop to the course. To receive a certificate of completion, students are required to attend the entire course so leaving early is not allowed per ULC policy.

Prerequisites.
There are no prerequisite requirements to participate in this course. Students do not need to know how to use any of the above software to participate. This course is open to the general public. The class is also appropriate

for planners in cities and towns and meets AICP certification for continuing education.

MECHANICAL-QUALITY VERIFICATION

Control Number: **74** Length: 36 Hours
CEUs: 3.2 PDHs: 32

Purpose.
This course provides the participant with information, procedures, and problem area solutions that must be known to effectively perform mechanical quality assurance duties. The course specifically addresses preparatory, initial, and follow-up inspection techniques concerning the equipment, material, and testing requirements for mechanical systems common to most building construction.

Description.
Through lecture, visual aids, conferences, and case study sessions, this course covers such subjects as (a) plumbing, (b) heating, (c) refrigeration, (d) air-conditioning, (e) fire protection, (f) HVAC controls, (g) outside utilities, (h) insulation, and (i) underground storage tanks. It emphasizes the government QA representative's role in construction quality management.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0801, 0802, 0809, 0810, 0830, and 0850; (b) Grade: GS-05 through GS-12, or equivalent. Nominees should have a current or projected assignment as an engineer, engineering technician, or construction representative, GS-12 and below, with mechanical quality assurance representative responsibilities. Nominees must not have attended this course or a similar course within the past 5 years.

Medical MILCON/SRM Program Execution

Control Number: **227** Length: 36 Hours
CEUs: 3.1 PDHs: 31 PDUs: 31

Purpose.
This course is taught in conjunction with the American Society for Healthcare Engineering (ASHE) and is designed to teach the standard practices for the design, construction, operations, and maintenance of healthcare facilities. It provides project managers, resident engineers, design managers, construction managers, and QA personnel with procedures, tools, techniques, and healthcare knowledge to effectively deliver healthcare construction projects.

Description.
At the end of the course, the learner should be able to:
1. Understand the criteria and practices that govern the construction of healthcare facilities from design through construction and occupancy.
2. Understand healthcare industry fundamentals, planning, the design and construction process, patient safety, and the medical funding sources for military and VA healthcare projects.
3. Obtain an American Society of Healthcare Engineering (ASHE) Healthcare Construction Workshop Certificate of Course Attendance.

These goals will be obtained through the use of presentations, case studies, and group exercises to encourage meaningful discussions and provide a hands-on experience.

This course provides Continuing Education Units under IACET, Professional Development Hours under the National Society of Professional Engineers, Professional Development Units under Project Management Institute, and learning units under the American Institute of Architects.

Prerequisites.
Nominees must be employees who provide Quality Assurance/Construction Quality Management (QA/CQM) of medical facilities; project managers, program managers, construction managers, and area and resident engineers; design engineers who design or review medical construction plans and specifications. Students who register for this course will be required to complete the 5-hour ASHE eLearning course before attending the in-person course.

MICRO-COMPUTER AIDED COST ESTIMATING SYSTEM II ADVANCED

Control Number: **312** Length: 32 Hours
CEUs: 2.8 PDHs: 28

Purpose.
This course provides cost engineering professionals with advanced instructions on accessing and utilizing the components of the MII software program not provided in the MII Basic course. The course presents detailed information on: (a) Military Programs, Civil Works, Environmental Remediation and Removal Projects and Programs, and modeling; (b) Crew Productivity Analysis for Civil Works; (c) Military Program, Civil Works and Environmental Work Breakdown Structures; (d) Management of MII Libraries, assemblies and tables, and (e) Other Advanced Cost Engineering Tools.

Description.
The course provides instruction on the use of modeling and quantity linking for the development of budget estimates, as well as detailed cost estimates. This modeling approach and other estimating techniques are used to develop ENG Form 3086 estimates in the proper electronic format, as well as Independent Government Estimates for contract award and modification. Parameter worksheets, quantity linking, and assemblies are also applied to crew productivity analysis for the development of Civil Works (CW) estimates. The course explores estimate structure development and reporting to accommodate the Civil Works Code of Accounts and the Military Programs and Environmental Work Breakdown Structures (WBS). Students will work with database functions to create site-specific unit prices, modify equipment costs for project specific circumstance, and adjust crews for overtime and shift differential.

Prerequisites.
(1) Students must be assigned (a) Occupational Series: Selected 0800, 0802, 0807, 0808, 0810, 0830, 0850, 1301, 1350; (b) Grade: GS-05 and above; (2) This course is open only to DoD personnel. Other participants must obtain CECW-CE approval and may be permitted to attend only on a last priority basis; (3) Students should have a decent working knowledge of (a) MII and should have taken the MII Basic and Cost Estimating Basics PROSPECT courses prior to this training, (b) Excel, particularly the use of ranges and if/then statements, (c) cost engineering, its rules and regulations, and (d) computer operations using the current Microsoft Windows operating environment.

Micro-Computer Aided Cost Estimating System II BASIC

Control Number: **305** Length: 32 Hours
CEUs: 3.1 LUs: 31

Purpose.
This course provides cost engineering professionals with instruction in the preparation and execution of computerized cost estimates using the latest MII cost estimating software program. The course also supplements computerized estimating with ready-reference material intended to improve the participant's knowledge of Corps of Engineers policies and procedures for preparing government estimates for Military, Civil Works and Environmental Remediation and Removal Project and Program construction projects.

Description.
Through lectures, demonstrations, and hands-on computer usage, this course covers the basic computerized aspects of estimating using the latest version of MCACES (MII), the latest CostBook (UPB) and other supporting libraries (i.e., equipment, assemblies, labor, etc.) The student is required to complete quantity takeoffs and prepare detailed cost estimates, which may require work to be done after regular class hours. A pretest and posttest will be given.

Prerequisites.
(1) Students must be assigned (a) Occupational Series: Selected 0800, 0802, 0807, 0808, 0810, 0830, 0850, 1301, and 1350; (b) Grade: GS-05 and above; (2) The course is open only to DoD personnel. Other participants must obtain CECW-CE approval and may be permitted to attend only on a last priority basis; (3) Students should have at least a basic working knowledge of (a) cost estimating (it is highly encouraged for students to have taken Cost Estimating Basics PROSPECT course prior to this training) and (b) computer operations using the current Microsoft Windows operating environment; (4) Previous exposure to MCACES (MII) software programs is helpful; (5) Students should bring a calculator with them.

National Electrical Code

Control Number: **78** Length: 36 Hours

CEUs: 3.0 PDHs: 30

Purpose.

PROSPECT course 078 was originally developed more than 30 years ago to meet the need within USACE to provide training for electrical professionals (includes engineers and technicians) to properly apply the requirements of the National Electrical Code in the design, construction, and maintenance of all USACE projects involving the use of electricity. The fields of electrical design, construction, and maintenance are very broad. Course 078 was developed to specifically address the electrical design and construction issues encountered on the wide variety of USACE projects, which include Military facilities, Civil Work structures and HTRW projects.

Description.

This course covers the application and interpretation of code requirements for the design, construction, and maintenance of interior electrical systems through directed informal discussion sessions, case studies and homework. Topics include, but are not limited to, interior distribution, grounding and bonding, motor and transformer circuits, calculations, ground - fault circuit interrupters, classified (hazardous) areas, special conditions, communication circuits, and use of tables.

Prerequisites.

Nominees should be assigned (a) Occupational Series: 0801, 0802, 0809, 0810, 0830, 0850, or 0855; (b) Grade: GS-09 or equivalent wage grade and above. Nominees should be electrical engineers of any grade level or engineering technicians or construction representatives GS-09 or above. Nominees should be familiar with the principles of interior electrical installations or currently be assigned responsibilities for design, construction, or maintenance of interior electrical installations at Corps or other government facilities. Nominees are required to bring a calculator to the course in order to perform example calculations.

NEGOTIATING CONSTRUCTION CONTRACT MODIFICATIONS

Control Number: **368** Length: 36 Hours

ACE: 1.0

Purpose.

This course provides instruction that will improve the participant's effectiveness in negotiating construction contract modifications. The course provides a thorough review of the requirements and processes to effectively analyze and negotiate contractor proposals. This course provides practical exercises that assist the participant in applying sound judgment to arrive at an equitable adjustment. The course is recommended for individuals who are involved in processing and negotiating construction contract modifications on firm, fixed-price contracts.

Description.

The course entails lectures, videos, discussions, case studies, and daily vignette/exercise sessions, which present an in-depth overview of requirements and processes uses to become effective negotiators. Upon completion of this course, the student will be able to identify fundamentals of negotiating construction contract modifications; apply principles of acquisition and construction contract modification; and evaluate modification criteria to determine costs, price and profit analysis.

Prerequisites.

Nominees should be assigned to Occupational Series 0340, 0800, 0810, 1102, and 0905; GS-05 or above or equivalent NSPS, Military: 0-3 and above, Civilian: GS-07 or above. Nominees should possess 1-3 years of experience or target assignment to jobs in construction, contracting, or contract administration and should have responsibility for processing, negotiating, or reviewing construction contract modifications. Nominees need to possess a general knowledge of the post-award construction contracting process. Previous completion of the Construction Contract Administration course (No. 366) is recommended.

O&M Contracts ADVANCED

Control Number: **318** Length: 28 Hours
CEUs: 1.8 PDHs: 18

Purpose.
This course provides Operations/Civil Works project personnel with additional skills for developing and administering operations and maintenance service contracts at U.S. Army Corps of Engineers civil works projects. The focus will include contracting for cleaning, mowing, facility maintenance and minor construction services.

Description.
Through lectures, field exercises, and directed discussion sessions, this course covers contract types, administrative considerations, legal implications, and handling adverse circumstances of O&M service contracts used on U.S. Army Corps of Engineers civil works water resources projects. This course provides project contract administration personnel with an advanced understanding in project operations where significant reliance on O&M contracting is required, and focuses on demonstrating different applications for the various contract types to address O&M requirements.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0023, 0025, 0300, 0400, 0800 and 1100; (b) Grade: GS-07 or above or equivalent WG grade and series. Students should be those assigned project office contracting responsibilities, or district office personnel involved in contract administration supervision. Students must have completed the Administration of Operation and Maintenance Contracts basic course (No. 119). A goal of the course is to expose students to contracting solutions they may not have encountered before, so students should attend sessions outside their home Division in order to receive the full benefit of the class field trip. It is strongly recommended that students DO NOT request a class location in their home district. Those that do are subject to re-assignment.

O&M SERVICE CONTRACTS

Control Number: **119** Length: 24 Hours
CEUs: 2.6 PDHs: 26

Purpose.
This course provides basic instruction on preparing and administering a broad range of service, supply, and small contracts and purchase orders used at civil works projects. Course work applicable to: Operations project managers, natural resource managers, park rangers, maintenance supervisors and staff, operations support personnel, also Army and civilian CORs for service contracts.

Description.
Service Contracting procedures being used on Army and civil works projects for operation and maintenance are addressed through lecture, discussion, and exercises. Special emphasis is given to those steps which are key to developing and administering successful contracting programs. As a basic first exposure to O&M contracting, the student will develop a sound understanding of techniques and responsibilities. Specific subjects addressed in the course are: contracting procedures, safety considerations, contract clauses/payments, COR duties and responsibilities, technical contract requirements, formulation of a solicitation, and quality assurance.

Individuals needing instruction in formal Construction Contracts should take the Construction Contract Administration course (#366).

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0023, 0025, 0300, 0400, 0800, 1100 and 4749; (b) Grade: GS-05, WG-05, and above. Students should have current or projected assignments involving project contracting procedures.

Operations Project Management

Control Number: **245** Length: 36 Hours

Purpose.
This course is targeted toward US Army Corps of Engineers employees who aspire to become Operations Project Managers (OPMs). It is taught by existing or former OPMs and national business program managers from a practical management perspective. It is intended to foster a uniform understanding of current programmatic changes, issues, and initiatives in both individual business line areas and general management practices.

Description.
This course is designed to provide students with insight into functioning as an OPM in the areas of the project management business process, budget preparation and execution, communities of practice, human resource management procedures, specific leadership skills, and union/management relations. It also covers individual business lines such as hydropower, flood damage reduction, recreation, navigation, environmental stewardship, and others from both an OPM's and a national perspective. An entire day of this course takes place in the USACE HQ office, exposing students to national senior leaders and program experts.

Prerequisites.
Nominees must be: (a) US Army Corps of Engineers employees: (b) Grade GS-11 or above; and (c) be directly involved in or experienced in the operation and maintenance of USACE operational projects. First consideration will be given to high potential aspiring OPMs who have been so identified by their command.

Paint Coatings and Quality Verification (QV)

Control Number: **84** Length: 36 Hours
CEUs: 3.1 PDHs: 31

Purpose.
This course is designed to develop students' quality verification, analytical, and problem solving skills to identify, prevent, correct, and resolve prevalent problems in the application of paints and coatings. Students will learn the basic concepts of paint composition, coating selection, safety, environmental & sustainability considerations, and construction quality management necessary to administer the painting requirements of project plans and specifications.

This course is identified as a requirement for the Architecture and Interior Design Communities of Practice.

Description.
Through lectures, hands-on demonstrations, analysis of case studies, and laboratory sessions, this course covers such subjects as: paint fundamentals; characteristics and selection of coatings; surface preparation and painting of metals, concrete and masonry surfaces, wood, wallboard, and other miscellaneous surfaces and material types; paint defects; paint approval; testing instruments; painting specifications; and safety, environmental, and sustainability considerations. Construction Quality Management, Maintenance Painting, and changes in guidance and regulations affecting painting are emphasized. Recent changes to the UFGS 09 90 00 and 09 97 02 are emphasized to include the use of the Master Painter's Institute (MPI) specifications and its application to the design-build process and other available online resources.

Prerequisites.
(a) Grade: All (b) Occupational Series: 0800, 1300, 4000, 5318, 5426. Other disciplines will be accepted provided nominee's present or anticipated duties require knowledge of coating systems involved in design, construction or facility maintenance. This includes architects and engineers with design, specification and review responsibilities. This course is open to those individuals from DPWs, BCEs, NAVFAC and other government agencies who are responsible for quality assurance and verification, specifying paint requirements for maintenance or new construction and those serving on constructability review teams.

Partnerships in Natural Resource Management (NRM)

Control Number: **328** Length: 32 Hours

Purpose.
This course is designed to develop an understanding of the capabilities of the Corps of Engineers NRM Partnership Authorities and to promote consistency in partnership policy application, explore alternative management techniques, funding sources and practical applications. Lecturers and instructors include HQUSACE staff, HQ Partnership Advisory Committee Members, and guest speakers.

Description.
Topics to be covered in class will be: a) USACE's NRM Partnership Authorities as described in ER-1130-2-500, b) Partnerships and their applications, c) Benefits of the Handshake Partnersip Program and development of applications for Handshake Funds, d) Partnership ethics, e) Cooperating Associations and Cooperative Agreements, f) Contributions, g) Volunteers, h) Lessons Learned and documentation of partnerships in OMBIL. (THIS COURSE FOCUSES ON THE RECREATION AND ENVIRONMENTAL STEWARDSHIP BUSINESS LINE PARTNERSHIPS)

Prerequisites.
(a) Attendance is open to all 0025, 0023, and 0400 series Natural Resource Management personnel, Managers, and Specialists who deal with partners and volunteers on a daily basis. Attendance is also encouraged for Office of Counsel, Real Estate, and Resource Managment staff. No prior knowledge of this topic is required to attend this class.
(b) Grade: GS-05 and above.

Pavement Evaluation and Design

Control Number: **115** Length: 36 Hours
CEUs: 3.0 PDHs: 30

Purpose.
This course teaches method and techniques for the evaluation and design of flexible, rigid, and unsurfaced pavements.

Description.
Through lectures, laboratory tours, field exercises, and discussions, this course covers the general concepts in pavement evaluation and design, selection of pavement system, design procedures, and computer applications. Specific topics include identification of surface deficiencies, PAVER, pavement management systems, field tests of soil, bases, and asphalt layers, rigid, flexible, and unsurfaced pavement design, overlay design, surface and subsurface drainage, and an overview of PCASE. Students are encouraged, but not required, to bring a laptop so that the PAVER/PCASE software can be installed and used during the course.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0800 series; (b) Grade: GS-09 or above. Student should have a current or projected assignment as a design or construction engineer or be a senior technician responsible for pavement evaluation, maintenance, rehabilitation, or construction.

Plan Formulation and Evaluation Capstone (Planning Core Curriculum Course3)

Control Number: **406** Length: 36 Hours

Purpose.
This course enhances the student's planning knowledge, critical thinking ability, communication skills, and capability to use planning tools and techniques to successfully lead a study to a quality decision document. Through case studies and participatory activities, the course provides the opportunity for planners with some training and experience to apply the critical thinking and decision making skills necessary to be a successful planner.

Description.
Upon completion of the course, the student will be able to apply the techniques and skills needed to lead a study through the six-step planning process. Students will be able to communicate risks and uncertainties associated with the study at each of the Feasibility Study Milestones. The six-step planning process and the importance of collaboration within the interdisciplinary project delivery team will be reinforced in this course. Specific attention is given to risk-informed decision making, the work products to support those decisions, levels of detail necessary for each planning milestone, adequate documentation in a clear manner and vertical team integration. The course follows the framework of the Feasibility Study Milestones with an emphasis on plan formulation strategies, the NEPA process, risk and uncertainty, level of detail, and communication. Presentations and exercises use case studies to apply the tools used during formulation, evaluation and comparison steps of the planning process. The course will be delivered as on-site training with a field trip incorporated to reinforce course content using current real world examples. This course is the Planning Core Curriculum Course 3.

Prerequisites.
Participants should be currently involved in the planning of civil works water resources development projects. Nominees should be involved in or closely support the planning phase of civil works project development and may include plan formulators, economists, environmental specialists, cultural resource specialists, engineers, physical scientits, project managers, program managers, and real estate specialists. Applicable Occupational Series include, but are not limited to the following: Selected 0020, 0100, 0300, 0400, 0800, 0900, 1100, and 1300 series or others such as public affairs officers, real estate, or counsel that support the development process

Prior completion of the PROSPECT Courses, "Civil Works Project Development Process" and "Planning Essentials", are required for planners. "Planning Principles and Procedures" (PCC2) is an acceptable substitute for Planning Essentials. Civil Works Orientation is an acceptable substitite for Civil Works Project Development Process. Priority will be given to GS5-GS12 students with more than 2 years of current planning experience.

Planning Essentials (Planning Core Curriculum Course 2)

Control Number: **77** Length: 40 Hours

Purpose.
This course enhances the student's knowledge and awareness of the USACE planning process by providing training on the Six-Step Planning Process and how to integrate engineering analysis, public involvement, and environmental and economic considerations during the development and evaluation of alternative plans for the USACE water resources development missions.

Description.
Upon completion of the course, the student will understand the USACE planning process, planning activities and their value in framing and addressing water resources problems. The student will become familiar with the six step plan formulation process and the integrated roles of multiple disciplines critical to this process. Specific attention is given to risk-informed decision making, and the work products and processes to support those decisions such as level of detail and vertical team integration. Additionally, the course will cover the fundamental technical efforts of plan formulation, economic analyses, analyses to determine the social effects of alternatives such as public safety and residual risk, NEPA/Environmental compliance, public involvement, communication, hydrologic and hydraulic considerations, and other engineering analyses important to making investment decisions regarding water resources projects. Course content and assignments will illustrate the USACE planning process and how to apply procedures, guidance, and policy. This is an online course which is delivered over eight weeks through distance learning involving blended synchronous (live webinars) and asynchronous (self-paced) lessons. Most of these lessons are delivered on-demand in Blackboard and consist of self-paced, narrated presentations and videos. These lessons are reinforced with a variety of assignments including some required reading, discussion board posts, and written assignments. Some lessons are presented using live interactive webinars. The syllabus for the class spreads the content out over eight weeks with weekly due dates for required assignments, scheduled times for live webinars, and recommended dates for the completion of on-demand lessons. Students are expected to be available during the eight weeks of the course to adhere to the syllabus, however, some flexibility with the completion of assignments and lessons may be afforded in special circumstances. Students will be graded on the completion of lessons and assignments, attendance to the live webinars and based on the results of a final exam administered the last week of the course.

Prerequisites.
Participants should be currently involved in the planning of civil works water resources development projects. Prior completion of the PROSPECT Course, "USACE Civil Works Project Development Process" is required. Prior to beginning this course, students are required to read the "Planning Primer" (IWR Report 97-R-15). Priority will be given to GS5-GS12 students with less than 3 years of current planning experience.

PROJECT MANAGEMENT - MIL PROG

Control Number: **88** Length: 36 Hours
CEUs: 3.2 PDHs: 32 LUs: 32 PDUs: 32

Purpose.
This intermediate level course provides the project manager in a programs/project management division with procedures, tools, and techniques necessary to effectively manage military construction (MILCON) projects from design authorization through construction completion. Additionally, this course provides members of the project delivery team (including technical, budget support, scheduling, contracting, legal specialists, etc.) an overview of the Department of Army facility planning, design, construction, and operation/maintenance policies.

Description.
Through lectures, directed discussions and case studies, this course covers project management of military programs using the Army MILCON (MCA) process as the model. It addresses the MILCON budget cycle, regulations and philosophy, planning and programming, the design process, A E and in house design management, A E selection and negotiations, project advertising and award, and project management responsibilities during the design and construction phases. Course focus is on Military Construction (MILCON) processes, application of Project Management Business Process (PMBP), and Project Management (PM) principles contained in ER 5 1 11, U.S. Army Corps of Engineers Business Process. Other programs are covered in general and by analogy.

Prerequisites.
Open to GS-11 or above. First priority will be given to personnel currently assigned as a military programs project manager. Second priority will be given to those personnel currently assigned to a military project delivery team. This is an intermediate level course and prospective students should have taken PROSPECT 355, 'Project Management in USACE' (or courses that provide equivalency) or have demonstrated equivalent work experience.

Project Management IN USACE

Control Number: **355** Length: 32 Hours

CEUs: 2.4 PDHs: 24 LUs: 24 PDUs: 24

Purpose.

This course is designed primarily for those individuals who are, or will be, a project manager in any program area. Project delivery team (PDT) members from functions other than project management may benefit through improved understanding of the project manager's and their own roles and an overview of the project management process.

Description.

The course provides the basic concepts and philosophy of project management and the USACE project management business process (PMBP); it introduces the phases of a project, discusses roles and responsibilities of the PDT, and provides tools for project management. The course seeks, through presentations, discussions, illustrations, team exercises and case studies to provide current guidance in using project management techniques and the PMBP. General project management skills, tools, and techniques are reinforced by the use of civil works and military programs case studies. Instruction covers the development of a project management plan (PMP), project scope, work breakdown structures, and project schedules; techniques for cost estimating, risk assessment/contingency management and performance measurement; assessing earned value; resourcing projects, and the civil works and military programs budget cycles.

Team dynamics and individual and team strengths are also discussed and illustrated throughout the course. Completing an individual on-line assessment is a course prerequisite.

This course is designed to teach you key elements of doing project management at USACE. It is intended to be a basic course that may be supplemented by other courses that specifically address in detail such elements as network analysis and scheduling, earned value; or in-depth mission specifics, such as Civil Works or Military Programs. This course does not teach you how to use P2.

This course includes instruction teaching and reinforcing the following competencies found in the National Technical Competency Study: a) Project Manager USACE Level 1 Certification, and b) Project Management, USACE.

Prerequisites.

Nominees should be in Grade GS-11 or above. This course is appropriate for newly assigned project managers or those who anticipate being assigned as a project manager with a minimum of 2 years' experience working with project teams. Additionally, this course may be taken by technical members of the project delivery team (PDT) to include budget, scheduling, contracting, and legal personnel requiring an overview of the project management process and procedures.

Completion of the Gallup StrengthsFinder Assessment is a mandatory course prerequisite. The online access code and website are to be requested by the students prior to attending their scheduled PM355 class.

Pocket calculators are needed for earned value and case study work.

Project Management Professional (PMP Prep)

Control Number: **402** Length: 36 Hours

CEUs: 3.5

Purpose.

This course will provide experienced USACE program and project managers a needed common language and baseline understanding of global standard project management practices, procedures, tools, and techniques in managing the execution of complex projects with a variety of customers and contractors.

Description.

At a minimum, learn, identify, understand (in detail) the ten project management knowledge areas (integration, scope, schedule, cost, quality, human resource, communications, risk, stakeholder management and procurement), the five project management process groups (initiation, planning, executing, monitoring & controlling, and closing), global project management terminology, project management tools and techniques, test-taking strategies, and professional ethics. Also, the course will outline the steps and requirements to apply for the PMP certification exam and support provided by the USACE Program and Project Management Community of Practice.

Prerequisites.

Attendees (a) must have a minimum of 3 years of full-time project management experience (with a bachelor's degree or higher) OR 5 years of full-time project management experience (b) should have began preparing for PMP exam (c) should register for a free PMI account at PMI Registration (d) should review PMI video, Maintaining Your PMI Credential: Introduction only (2:17 minutes), and should add their intent to take the PMP exam to their Individual Development Plan.

Public Involvement - Communication

Control Number: **91** Length: 36 Hours
CEUs: 3.1

Purpose.
The course prepares staff to communicate and engage with the public about the broad range of agency activities and decisions, and to build stakeholder relationships.

Description.
Students who attend this course will build a communication strategy (for on-going or project-specific activities), including identifying audiences, developing key messages, and choosing appropriate virtual and face-to-face strategies and tactics. Students will gain an appreciation for the importance of effective communication and the value of public involvement in supporting the USACE mission. Students will leave with tools, tips and techniques for communicating more effectively and handling challenging situations.

This course will develop proficiencies in strategic planning for public involvement and effective communication in USACE activities, delivering presentations, responding to audience questions, building trust, developing and delivering key messages, designing public meetings and workshops, and managing conflict. Skill-building activities, case studies, and group projects are used throughout the course to give students the opportunity to directly apply course concepts.

Prerequisites.
This course is for staff whose responsibilities require communicating with and engaging the public about agency activities and decisions. Nominees should be assigned (a) Occupational Series: selected 0100, 0020, 0021, 0023, 0025, 0026, 0300, 0400, 0800, 1000 and 1300; (b) Grade: Suggest Target Audience be GS 9-14, including Rangers, Park Managers, Project Managers, and anyone who does or may engage with the public during any phase of a project, from planning to operations.

Public Involvement and Team Building in Planning

Control Number: **407** Length: 36 Hours

Purpose.
Corps of Engineers planners typically work in multi-disciplinary teams, often involving project sponsors, other federal and state agencies, and occasionally stakeholder groups or private individuals. These teams, in turn often consult with a broader public, identifying and addressing public concerns as the agencies proceed through the planning process. This environment requires skills for successfully designing and conducting processes that effectively draw together the different partners and stakeholders throughout the planning process, resulting in decisions that enjoy broad public support.

Description.
This course will concentrate on the methods, techniques, and skills that assist Corps of Engineers Civil Works Planning teams with developing a high-functioning team and maintaining effective communication with sponsors, stakeholders and interested parties throughout the life of the study. Participants will learn ways to raise awareness of ongoing studies and efforts, integrate stakeholder values and concerns into the formulation and evaluation of projects, manage conflicts and disputes, and develop strategies to align participation activities with the Corps of Engineers Six-Step Planning Process. By the end of this course the student will be able to develop an effective stakeholder engagement strategy, effectively lead and participate in teams, design and facilitate an interactive public meeting or workshop, and respond to media requests effectively. The course was formerly known as PCC7.

Prerequisites.

Nominees should be Civil Works planners, project managers, public affairs specialists, engineers, real estate specialists or other disciplines assigned to a planning study team. Students should have basic working knowledge of the Corps of Engineers Six-Step Planning Process and Civil Works Process. Prior completion of Civil Works Project Development Process and Planning Essentials or equivalent courses is highly recommended.

Public Law 84-99

Control Number: **158** Length: 00 Hours

Purpose.
This course provides a comprehensive overview of the U.S. Army Corps of Engineers (USACE) Emergency Management Program. The course includes studies of the policy and guidance associated with the USACE emergency management authority, Public Law 84-99 (PL 84-99).

Description.
Through lectures, case studies, discussions and exercises, the student receives training in the following areas: USACE emergency responsibilities involving all-hazard natural disaster preparedness, Advance Measures; emergency operations (flood operations and Post Flood Response); rehabilitation of flood damage reduction projects damaged by floods or storms; protection or repair of federally authorized shore protection works damaged by coastal storm; and provision of emergency water supplies needed as a result of drought or contaminated sources.

Prerequisites.
District and MSC emergency managers must approve nominations. In general, nominees should be: (a) emergency management personnel; (b) functional or technical staff who are currently assigned to/or working in positions with responsibilities related to emergency management, flood damage reduction projects, inspections and maintenance, rehabilitation of damaged flood risk reduction projects and emergency response operations. Attendance by other personnel will be determined based on space available in the course. All emergency management personnel should have this course within the first year of their assignment to the emergency management organization and every three years thereafter as a refresher. Program Manager for PL 84-99 will have final approval authority over all nominations, based on the recommendation(s) of district and division emergency managers/regional contingency operations managers. As many skills and competencies are involved in planning and conducting emergency operations, there is no specific job series requirement to attend this course. ADD: All 089 personnel (new career field) are included in these requirements.

Public Law 84-99 Advanced

Control Number: **159** Length: 24 Hours

Purpose.
This course provides mid-level to experienced Emergency Management personnel with in-depth and advanced concepts and policy application considerations to enhance their leadership and management skills, abilities, and knowledge associated with the USACE emergency management authority, Public Law 84-99.

Description.
Through lectures, case studies, discussions, and exercises, the student will receive advanced/in-depth training in complicated aspects of PL 84-99 authority, to include HIRA (Hazard Identification and Risk Analysis), Project Information Report management, the Levee Safety-EM levee inspection process, leadership, communications, and operational planning.

Prerequisites.
PL 84-99 Basic PROSPECT Course, permission of the course proponent.

RADIOACTIVE WASTE TRANSPORT/DOT RECERTIFICATION

Control Number: **430** Length: 20 Hours

Purpose.
This 20-hour course provides recurrent training regarding the regulatory requirements of the Hazardous Materials Transportation Act (HMTA) and the Resource Conservation and Recovery Act (RCRA) as it applies to the generation, transportation and disposal of hazardous waste and Class 7 and 9 radionuclides. It enables employers to certify as required in 49 CFR 172 Subpart H, that their employees have been trained and tested in general awareness and function-specific elements as described below. In addition, this is a DoD approved course as per DoD 4500.9-R. (Note: Certain RCRA and safety related training elements required by 49 CFR 172 Subpart H and 40 CFR 265.16 are typically site-specific and must be performed on the job.)

Description.
Training topics covered the identification and classification of hazardous waste for purposes of preparing a hazardous waste manifest and fulfilling the DOT requirements for shipping hazardous wastes. Specifically, training topics include RCRA waste classification; land disposal restrictions and notification; manifesting requirements; identification of a DOT Reportable Quantity; use of the Hazardous Materials Table; and DOT requirements for determining a shipping name, properly packaging, labeling, marking, placarding, DOT emergency response requirements, and general security awareness. In addition, the course addresses special EPA and DOT requirements for shipping asbestos and PCBs.

Prerequisites.
This is a refresher course. Students must have previously completed either PROSPECT course #223 or another initial training as specified under 49 CFR 172, Subpart H and initial radioactive waste training. This course is primarily targeted at persons in the following job series: 0800, 0820, 0809, 0810, 0819, 0028, 0029, 0025, 0026, 0401, 1350, 1301, 0893, 0830, 1306, and 1320. (All series involved with environmental programs including engineers, chemists, industrial hygienists, health physicists, biologists, geologists, hydrogeologists, program managers, project managers, etc.) as well as all Installation environmental staff, Civil Works Environmental Compliance Coordinators, and Civil Works personnel required to sign hazmat shipping documents and/or hazardous waste manifests. The training is designated for persons with any of the following job responsibilities: identification of proper shipping names for hazardous and/or radioactive waste in accordance with DOT regulations; selection of appropriate packagings, markings, labels and placards in accordance with DOT regulations; RCRA waste identification and classification; completion or review of hazardous waste manifests and/or land disposal restriction notifications; preparation of shipping documents for radioactive waste, used oil, asbestos and PCBs; shipping of analytical samples; loading or unloading of radioactive or hazardous wastes; and transportation of hazardous materials in general.

Real Estate Mgt and Disposal 101

Control Number: **7** Length: 24 Hours

Purpose.
The real estate management and disposal mission of the Department of the Army has no counterpart in the private sector. The laws, regulations, and policies pertaining thereto are unique to the Federal Government. This course provides a basic overview of the outgrant and disposal policies, procedures and regulations for Army and Corps of Engineers projects, with emphasis on routine actions that use standard formats, such as licenses and building disposals.

Description.
The course includes lectures, class discussions, problem solving, and testing. Topics for presentation address (a) authorities, documents, and procedures for placing property in excess status or to approve disposal; for GSA disposal, agency disposal, or special authority disposal, (b) disposal document preparation, (c) authorities, documents, and procedures for making property available for use by others, (d) routine outgrant document preparation, (i) outgrant management and administration, (j) environmental considerations and (k) negotiation skills. After completion of this course the student should have a foundation upon which to begin work on routine actions and, with additional study and experience, advance to more advanced real estate management and disposal actions.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0905, 1101, 1170, and 1171; (b) Grade: the GS-05 through GS-11; (c) personnel primarily assigned to real estate functions within the Corps of Engineers. Individuals outside prerequisite occupational series and grade and those actively interact with real estate activities (such as Operations staff, master planners, and Installation DPW staff) will be considered on a space available basis. Nominees should have a general understanding of the Corps of Engineers organizational structure, which generally requires on the job experience for a minimum of 6 months, and have read the pertinent Army Regulation and Real Estate Handbook, ER 405-1-12, Chapters 8 and 11.

Real Estate Acquisition 101

Control Number: **79** Length: 24 Hours
CEUs: 3.0

Purpose.
The real estate acquisition mission of the Department of The Army has no counterpart in the private sector. The laws, regulations, and policies pertaining thereto are unique to acquisition of real estate by the Federal Government or in conjunction with Federal projects. This course provides a basic overview of the land acquisition policies, procedures and regulations for Army and Corps of Engineers projects.

Description.
The course includes lectures, class discussions, problem solving, and testing. Topics for presentation address (a) project planning, documents, and authorities, (b) elementary mapping and legal descriptions, (c) title evidence, (d) just compensation, (e) condemnation, (f) general fundamentals of appraisals for land acquisition, (g) interest and estates in land, (h) local cooperation and cost-sharing, (i) environmental considerations, (j) negotiation skills, and (k) crediting for land provided by project sponsors. After completion of this course, the student should have a foundation upon which, with additional study and experience, a knowledge base in real estate acquisition can be built.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0318, 0905, 1101, 1170, and 1171; (b) Grade: GS-07 through GS-11; (c) personnel primarily assigned to real estate functions within the Corps of Engineers. Individuals outside the prerequisite occupational series and grade and those actively engaged in real estate activities (such as planners and project managers) will be considered on a space available basis. Nominees should have a general understanding of the Corps of Engineers, which generally means experience of about 6 months or more, and have read the Real Estate Handbook and other Army policy related to acquisitions.

Real Estate Acquisition 201

Control Number: **121** Length: 24 Hours

Purpose.
The real estate acquisition mission of the Department of the Army has no counterpart in the private sector. The laws, regulations, and policies pertaining thereto are unique to acquisition of real estate by the Federal Government or in conjunction with Federal projects. This course provides an advanced overview of the land acquisition policies, procedures and regulations for Corps of Engineers Civil Works water resources projects.

Description.
The course includes lectures, class discussions, problem solving, and testing. Topics for presentation address (a) preparation of real estate plans, (b) just compensation, (c) estates in land, including non-standard estates, (d) environmental considerations, (e) Continuing Authority Program (CAP) issues, (f) crediting for land provided by project sponsors, (g) utility and public facility relocations and, (h) Project Partnership Agreements (PPA) principles.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0318, 0905, 1170, and 1171; (b) Grade: GS-11 and above; (c) personnel primarily assigned to real estate planning or acquisition functions for Corps of Engineers Civil Works projects. Individuals must have completed RE Acquisition 101, Course No. 079, 49REA01A, or have equivalent experience. Individuals outside the prerequisite occupational series and grade and those actively engaged in real estate activities (such as planners and project managers) will be considered on a space available basis. Nominees should have an advanced understanding of the Corps of Engineers organizational structure and have read pertinent Real Estate regulations.

Real Estate Disposals 202

Control Number: **76** Length: 24 Hours

Purpose.
The real estate disposal mission of the Department of the Army has no counterpart private sector. The laws, regulations, and policies pertaining thereto are unique to the Federal Government. This course provides an advanced overview of the Disposal portion of the management and disposal mission, policies, procedures and regulations for Army and Corps of Engineers projects, with emphasis on complex actions.

Description.
The course includes lectures, class discussions, problem solving, and testing. Topics for presentation address (a) authorities, documents, and procedures for various types of disposals, (b) environmental land use controls and documentation, (c) negotiation skills. After completion of this course, the student should have advanced to real estate disposal actions, although additional study and experience will be required

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0905, 1170, and 1171; (b) Grade: GS-11 and above; (c) personnel primarily assigned to real estate disposal functions within the Corps of Engineers. Individuals must have completed RE Management and Disposal 101, Course No. 007, 49RED01A, or have equivalent experience. Individuals outside the prerequisite occupational series and grade will be considered on a space available basis. Nominees should have an advanced understanding of The Army and the Corps of Engineers organizational structure and have read the appropriate Engineer regulations.

Real Estate Mgt and Disposal 201

Control Number: **73** Length: 30 Hours

Purpose.
The Real Estate management and disposal mission of the Department of the Army real Property has no counterpart in the private sector. The laws regulations and policies pertaining there to are unique to the Federal Government. This course provides an advanced overview of the Management and Disposal portion and management and disposal mission, policies, procedures, and regulations for Army and Corps of Engineers projects with emphasis on complex actions and outgrants.

Description.
The course includes lectures, class discussions, problem solving, and testing. Topics for presentation address (a) authorities, documents and procedures for various types of disposals, and complex outgrants, (b) preliminary environmental due diligence documentation, (c) management of title, encroachments and boundary disputes,(d) Postal disposal activities (e) authorities, documents and procedures for making property available for use by others, (f) complex outgrant document preparation, (g) outgrant management and administration. After completion of this course the student should have a more advanced knowledge of the concepts, practices and principles of real estate management and disposal actions, although additional study and experience will be required.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0905, 1170, and 1171; and other job series assigned to the real estate elements (b) Grade: GS-11 and above; (c) personnel primarily assigned to real estate management and disposal functions within the Corps of Engineers. Individuals must have completed RE Management and Disposal 101, Course No. 007, 49RED01A, or have equivalent experience. Individuals outside the prerequisite occupational series and grade will be considered on a space available basis. Nominees should have an advanced understanding of the Army regulations and the appropriate Engineer regulations.

Real Estate Project Mgt & Control(RE PM&C)

Control Number: **144** Length: 24 Hours

Purpose.
The real estate planning and control (P&C) function of the Corps of Engineers, Real Estate elements comprises a myriad of duties and responsibilities. This course provides a basic overview of the planning and control policies, procedures and regulations for Corps of Engineers mission support. The course outlines how P&C interfaces with other elements of the Corps and addresses broad aspects of the fiscal, manpower, planning, and real estate management information systems within real estate, Corps of Engineers, and the Army.

Description.
The course includes lectures, class discussions, problem solving, and testing. Topics for presentation address (a) real estate planning, budgeting, and manpower, (b) real estate surveying, land descriptions, (c) real estate data validation and records management, (d) real estate accountability and Chief Financial Officer Act issues, (e) authorities, documents, and procedures, (f) real estate aspects of Life Cycle Project Management, and (g) use of automated Real Estate information systems and their interaction with other Army and Corps systems. After completion of this course, the student should have a foundation upon which to begin work on routine actions and, with additional study and experience, advance to more advanced real estate P&C actions.

Prerequisites.
Nominees must be assigned (a) Grade: GS-05 and above and (b) personnel primarily assigned to real estate functions within the Corps of Engineers. Individuals outside the prerequisite grade and will be considered on a space available basis. Nominees should have a general understanding of the Corps of Engineers, which includes a minimum of 6 months experience, and have read pertinent Real Estate regulations.

Real Property Asset Management

Control Number: **286** Length: 32 Hours
CEUs: 2.7

Purpose.
This course is designed as an introduction and overview to Army Real Property Asset Management as well as a means of providing information on changes and issues relating to the responsibilities, regulations, authorities, policies, and procedures of Real Property Asset Management. The objective of the course is to provide an overall understanding for new Army real property personal and also to enhance the knowledge of an experienced person(s) who perform(s) functions related to Real Property Management.

Description.
This course provides the most up-to-date information on the life cycle of real property and its management through lectures, case studies, interaction and practical exercises. This course will provide the most current information on Army real property accountability to include requirements of the Chief Financial Officers Act for Real Property Accountability and Reporting, and automated management systems associated with Army real property management and accountability. This course will also introduce students to the underlying authorities for real property accountability.

Prerequisites.
Nominees should include personnel both directly and indirectly associated with the management of Army real property, military and civil for all Army components.

Real-Time Water Management With CWMS

Control Number: **155** Length: 36 Hours

Purpose.
The Corps Water Management System (CWMS) is the automated information system (AIS) supporting the Corps' water control operations mission. CWMS provides data collection, processing, decision support modeling, data dissemination, and graphics tools to allow each local office to effectively execute their water management mission in real-time. This course will provide water managers the training necessary to effectively use hydrologic and hydraulic modeling software in CWMS for real-time operations. The students will learn specialized features of CWMS, including calibration and execution of model programs in support of the daily decisions made in the course of Corps project operations.

Description.
Topics will include:

1) The use of CWMS hydrologic and hydraulic models (HEC-HMS, HEC-ResSim, HEC-RAS and FIA) through the Control and Visualization Interface (CAVI).
2) Calibration of model parameters in real-time.
3) How to model and evaluate possible hydro-meteorological and operational scenarios, in real-time, to improve reservoir operations.
4) Specialized CWMS concepts and tools, such as real-time data usage and scripting. This class does not address the installation of CWMS or the development of models.

Prerequisites.
Nominees must be assigned:
(a) Occupational Series: Selected 0400, 0800, and 1300
(b) Grade: GS-09 or above.
(c) Nominees should be water control managers, hydrologists, or hydraulic engineers.
(d) Nominees should have some experience and responsibility for real-time reservoir or flood control operations and with the H&H models mentioned above

REGULATORY I

Control Number: **100** Length: 24 Hours

Purpose.
This course provides a comprehensive background in the Regulatory Program and an understanding of current Regulatory policies and procedures. The instruction focuses on hands-on learning in a case-study decision-making environment.

Description.
This course covers a broad range of topics that personnel in the Regulatory Program must be familiar with in order to make timely and legally defensible decisions. Topics to be covered include (a) Background and Program Overview; (b) Permit Process; (c) Jurisdiction; (d) Reviewing and Assessing Applications; (e) 404(b)(1) Guidelines; (f) Compliance and Enforcement; (g) Site Inspection; (h) NEPA Compliance; (i) Special Policies and Procedures; (j) Construction Method; (k) Decision-Making Process/Public Policy Process; (l) Permit Documentation; (m) General Permits; and (n) Conflict Management/Public Involvement. This course primarily focuses on providing hands-on training and case studies to reinforce the policies and regulations learned.

Prerequisites.
Nominees may be assigned to the following Occupational categories: 020, 028, 099, Series 0100,0300, 0400, 0800, 0900, 1300, and selected others; (b) other; Nominees should work in the Regulatory functions program. However, other Corps employees required to support Regulators could benefit from this course and can request a spot but will be placed only if there is sufficient availability. Only Regulators can be assigned priority 1.

We are now offering prerequisites through Blackboard. The completion of lessons 1 - 26 is required prior to attending REG 1. The online training lessons are available in the USACE blackboard. This online training is available to all USACE employees may be accessed at: https://usace.ellc.learn.army.mil

Instructions for enrolling for Modules:
1. Log into USACE Blackboard using your CAC/PKI

2. Select the COURSES tab in the upper right corner

3. Locate the USACE Regulatory Training Courses catalog on the left side of the page. Select the folder USACE REGULATORY TRAINING COURSES.

4. When the training catalog opens, locate the desired course and select the caret next to the course you want to enroll, then select enroll. Then select OK to go directly to the Module.

5. Once enrolled, you may return to the COURSE tab and the course should now be listed under MY COURSES.

6. Double click the course and it will launch.

Regulatory IIA

Control Number: **322** Length: 24 Hours

Purpose.
This course provides in-depth discussion of the procedural issues related to the more complicated laws, regulations, and policies which Corps regulators are called upon to enforce.

Description.
This course covers scope of analysis, cumulative impacts, historic properties, tribal issues, and endangered species.

Prerequisites.
Target Audience: Supervisors, project managers, enforcement officers, journeyman level regulators with a minimum of two years' experience in grade level Gs-07 and above.

Nominees must have attended the Regulatory I training course and/or the DL Corps Regulatory Program "onboarding" modules listed on the USACE Blackboard Learning Management System (LMS). This course is only open to Corps Regulatory Program staff.

Regulatory IIB

Control Number: **323** Length: 24 Hours

Purpose.
This course provides in-depth discussion of the more complex decisions that must be made throughout a permit evaluation, leading to a reasonable and timely final permit decision.

Description.
The course covers geographic and activity-based jurisdictional determinations, exemptions, general permits, wetlands management, purpose, need, alternatives analysis, 404(b)(1) guidelines, public interest review, documentation, administrative appeals, and compensatory mitigation.

Prerequisites.
Target Audience: Supervisors, project managers, enforcement officers, journeyman level regulators with a minimum of two years' experience in grade level GS-07 and above.

Nominees must have attended Regulatory I training course, the DL Corps Regulatory Program modules 1-25 and 31, 32, 36, 37, and 41-44, in the USACE Blackboard Learning Management System (LMS).

REGULATORY IIC

Control Number: **370** Length: 32 Hours

Purpose.
This course provides in-depth discussion specific to permit evaluations associated with project proposals in coastal areas, including the Great Lakes. It is designed to be complementary to the Regulatory IIA and IIB curricula, not to replace them, providing regulators with the specific background necessary to effectively and efficiently evaluate projects proposing to impact coastal aquatic resources. Previously, this information was included in Regulatory IIA and IIB; however, as the Regulatory program increases in complexity, it is necessary to devote additional time to issues specifically related to the coastal zone.

Description.
The course will provide a comprehensive background related to coastal issues, focusing on coastal processes and activities, jurisdiction, essential fish habitat, coastal species/habitat protection and conservation, and coordination with other Corps business lines and other agencies with related missions using a cast study approach.

Prerequisites.
Completion of lessons in Modules 33 and 68 in Blackboard is strongly recommended. Completion of REG I or Modules 1-26 in Bb, and at least 1 of the following Regulatory IIA, Regulatory IIB, or NEPA for Regulators is required. TARGET AUDIENCE: Includes all Corps Regulatory staff and Corps Counsel whose duties require them to evaluate and manage Regulatory Program actions in coastal Districts (i.e., Great Lakes, Atlantic Ocean, Gulf of Mexico, and Pacific Ocean). Other Corps employees required to support Regulators may benefit from this course and may request a seat. Placement is based on availability. Only Regulatory staff and Corps Counsel can be assigned priority 1.

Regulatory III

Control Number: **325** Length: 24 Hours

Purpose.
As part of the Corps of Engineers Regulatory program, this course provides in depth discussion of enforcement policies and procedures. It covers a wide range of topics that include the investigation of unauthorized activities and compliance with Department of the Army permits.

Description.
This course provides in depth instruction regarding 33 CFR 326 as it pertains to the Corps of Engineers enforcement authorities. Covering topics such as enforcement policy, investigation and resolution options for unauthorized activities, performance of permit compliance, resolution options for permit non compliance and several other topics. The discussion of case studies will be used to deliver relevant information and equip students with the skills to undertake enforcement or non compliance actions.

Prerequisites.
Prior to attending this course, nominees must have completed:

- Module 71 in the USACE Blackboard (https://usace.ellce.learn.army.mil) plus PROSPECT Course 325, Regulatory I

OR

- Module 71 plus Modules 1-26 in the USACE Blackboard

Relationship Management

Control Number: **224** Length: 24 Hours

Purpose.
What is Strategic Relationship Management (SRM) and why it is important to USACE as a reimbursable government agency. In this course students will focus on customer / partner needs, conduct macro trend analysis, identify opportunities for the customer and USACE, conduct a SWOT analysis (strengths, weaknesses, opportunities, threats), determine the types of assistance from USACE the customer most needs, and create an outreach plan to address those needs.

Description.
This course helps leaders and action officers create account plans that lead to productive partnerships. The course content focuses on customers, their needs, and ways USACE capability can be used to help them meet their metrics for success. First, we identify the stakeholders/partners to be considered. We then research their mission statements, goals and metrics to understand their intended direction. Using trend analysis, we anticipate future needs and identify potential opportunities for USACE to help them succeed. This is followed by SWOT analysis to better clarify the best intersection between their needs and USACE capability. From there, we create an action plan, or relationship management plan to knit together their engineering needs with our technical capabilities. This includes using the 5Ps of marketing and IFBP value proposition analysis. Finally, we discuss the outline and content of Account Plans and Strategic Engagement Plans.

Prerequisites.
Generally those who are in direct contact with stakeholders and end-users. Specifically that includes USACE Outreach Coordinators, Account Managers, Project Managers and Program Managers. Sometimes this also includes key project delivery team members who have frequent contact with stakeholders, end-users and project partners. Students should be journey-level or above and have had experience working with outside stakeholders and end-users.

Reservoir Systems Analysis with HEC-Reservoir Simulation

Control Number: **98** Length: 36 Hours

Purpose.
This course provides participants with a capability to perform reservoir system studies using computer simulation to analyze reservoir system performance.

Description.
Reservoir simulation for flood control, water supply, hydropower and multipurpose operation is covered. The computer program, Reservoir System Simulation(HEC-ResSim) will be used for reservoir simulation problems. In addition to reservoir simulation by computer, the course covers topics related to developing flow data and systems demands, plus formulating and evaluating alternative reservoir system configurations and operation strategies.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0800 and 1300; (b) Grade: GS-07 or above. A basic level of understanding is required in hydrology, hydraulics, and reservoir regulation. In addition, it is strongly recommended that course participants be in positions where they will be involved in reservoir system studies within the next year or two.

Riparian Zone Ecology/Restoration/MGT

Control Number: **281** Length: 36 Hours

Purpose.
This course addresses planning and management issues that pertain to riparian (streamside) ecosystems in a variety of ecological and geographical settings. Emphasis is placed on the ecology, restoration and stewardship of riparian habitats associated with Civil Works projects and activities. Students will receive instruction on the functions and ecological importance of riparian zones, conservation needs, potential impacts resulting from various land use practices, and restoration and management techniques that can be applied to maintain or improve riparian systems.

Description.
Through a series of lectures, practical exercises, and field activities, students will be introduced to the following topics: (a) riparian functions, values, and trends; (b) riparian ecology (vegetation, fauna; will include sessions on the importance of riparian zones to mammals (emphasis on bats), reptiles/amphibians, and neotropical migrant birds); (c) inventory and monitoring techniques; (d) impacts (hydrologic changes, vegetation modification, non-native invasive species, agricultural practices, bank erosion, non-point source pollution); (e) restoration methods (including monitoring and adaptive management); (f) fluvial geomorphology combined with a multitude of stream/riparian restoration case studies, and (g) management strategies (including development of appropriate designs for corridors and buffer strips). Students will participate in a day-long field trip to local rivers and a large dam removal site with associated restored riparian floodplains, to examine riparian habitats and demonstrate restoration monitoring and adaptive management techniques. Case studies will be presented on riparian issues at Civil Works projects and military installations. SUBJECTS AND LEARNING OBJECTIVES. Students will be able to characterize riparian habitats, understand the functions and values of these habitats, and make the most appropriate decisions regarding their restoration, use, conservation, and management from an ecosystem perspective. Applicable laws, regulations, and agency policies will be reviewed. Students will be able to identify specific techniques and procedures for inventorying, assessing, analyzing, and evaluating the status of riparian resources and associated impacts upon these resources.

Prerequisites.
Nominee assignments should be: (a) primarily technical personnel whose duties involve the identification, evaluation, analysis, protection or management of ecological resources. Project and Program Managers responsible for project and program management

activities, particularly those involving ecosystem restoration, would also benefit; (b) Occupational series: 0020s, 0150, 0185, 0190, 0198, 0400s, 0800s, 1023, 1350 to include physical scientists, environmental protection specialists, and hydrologists; and (c) Grade: GS-09 or above. Disciplines (other than the above) may be accepted provided nominee's present or anticipated duties involve the management, analysis, identification, protection, or evaluation of ecological/natural resources.

Risk Analysis for Flood Damage Reduction Projects

Control Number: **209** Length: 36 Hours
CEUs: 2.6 PDHs: 26

Purpose.
This course presents risk concepts and assessment methods required by current Corps guidance for the planning of flood risk management projects, and is intended for persons who are presently or will soon be actively involved in the formulation and evaluation of flood risk management alternatives for planning studies. The course emphasizes policy issues, statistical analysis concepts, and the implementation of risk assessment and uncertainty methods for sizing and evaluating flood risk management projects. The course objective is to enable participants to readily adapt the methods to specific studies after successfully completion of the course.

Description.
This course presents risk assessment methods and concepts, many of which are required by Corps guidance. The objective is to enable participants to readily adapt these methods and concepts to their own studies and projects after successfully completing the course. Policy issues, concepts in statistical analysis, and risk and uncertainty methods used in the evaluation of flood risk management projects are emphasized in the course. Workshops provide participant with the opportunity to apply the course's concepts using the Hydrologic Engineering Center Flood Damage Reduction Analysis (HEC-FDA) software program.

Prerequisites.
Nominees for the course should have a minimum of two years experience in the hydrologic, hydraulic, economic, or plan formulation aspects of flood risk management projects. Managerial and supervisory personnel are encouraged to attend. Nominees must be assigned (a) Occupational Series: Selected 0000-0100, 0800, and 1300; (b) Grade: GS-09 or above.

RISK ANALYSIS-WRP&M

Control Number: **349** Length: 36 Hours
CEUs: 3.1

Purpose.
This course introduces concepts and tools of risk analysis into Corps of Engineers planning studies and extends these concepts to studies for structural rehabilitation and for management and operations of existing projects. Risk analysis is a decision-making framework that explicitly evaluates the level of risk if no action is taken and recognizes the monetary and non-monetary costs and benefits of reducing risks when making decisions. Risk analysis also deals with uncertainties in models, parameters, and assumptions and acknowledges them in decision making. Risk analysis comprises three tasks: risk assessment, risk management, and risk communication. Many risk assessment techniques are already in use by Corps analysts, but are not applied in systematic and uniform manner. New methods and analytical models have been developed, along with a body of information on risk perception and communication that will also be transferred to practice.
Risk analysis is an integral component of Corps of Engineers decision making in all business lines. It affects all technical analysis throughout each step of planning process. For example, risk perception and communication is an important element of the scoping process. Environmental analysis, hydrologic analysis, and benefit-cost analysis all require aspects of risk analysis. In addition, risk concepts and risk informed decision making are being extended to aid decisions in all phases of project life. Major aspects of risk analysis included in this course are (a) definitions and concepts, (b) probability and statistics; (c) models for risk analysis; (d) non-quantitative methods; (e) event trees and decision trees; (f) Monte carol simulation; (g) using scenarios; (h) benefit-cost uncertainty; (i) risk informed planning; and (j) case studies from various applications to civil works. The course includes extensive use of computer exercises as aids to learning including hands-on risk modeling and assessment tools.

Description.
After completing this course the student should be able to: 1. Discuss the major causes of uncertainty in the Corps' Civil Works Program; 2. List the elements of integrated risk management; 3. Describe the differences between uncertainty and variability; 4. Use scenarios to deal with uncertainties; 5. Apply one or more qualitative risk assessment techniques; 6. List the Corps' software tools that support risk-informed planning; 7. Build a simple probabilistic scenario analysis in a spreadsheet environment; 8. Apply the addition, multiplication, and complimentarily rules for probability in simple problems;

9. Use the binomial distribution for simple probability calculations; 10. List the most useful distributions used in quantitative risk assessment; 11. Develop a distribution given some data; 12. Describe the two steps of the Monte Carlo process; 13. Run a simulation that uses the Monte Carlo process; 14. Conduct basic sensitivity and importance analysis; 15. Understand the issues of communicating technical and non-technical risk information to decision makers and stakeholders.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0020, 0340, 0110, 0801, 1300; (b) Grade: GS-07 through GS-13. This course is designed for planners and engineers. However, other personnel (project managers, operations, regulatory, recreation, etc.) will find it useful in terms of broadly applicable principles, concepts, and analytical tools.

Risk Communication and Public Participation

Control Number: **104** Length: 24 Hours

Purpose.
The course is designed to teach participants to better communicate risk, understand and engage various publics, and learn to use the public participation planning process.

Description.
This is an interactive workshop that teaches participants strategic communication, risk communication and public participation principles and strategies relevant to any issue. Participants learn how to identify missions, goals and objectives; identify and prioritize various publics; develop risk communication messages; determine the most effective methods and tools for conveying these messages; and evaluate the success of risk communication and/or public participation efforts. Participants of the course learn: how to handle hostile individuals and audiences and respond to challenging questions and statements; how to avoid traps; how to select the right public participation techniques; and how to improve and apply nonverbal communication skills.

Prerequisites.
Target Audience is USACE employees who interact with the public on a regular basis including members of Project Delivery Teams, Project Managers, Planners, Operations and Natural Resource Management, Dam and Levee Safety, Emergency Management, Environmental and Regulatory personnel, and Public Affairs personnel.

Safety Management for SUPV and LDRS

Control Number: **236** Length: 24 Hours

Purpose.
This course is designed for Corps of Engineers team leaders, supervisors and/or managers who have responsibility for overseeing contract or in-house construction and operational activities. This 3-day course will provide managers and supervisors with current administrative safety requirements, safety management techniques, hazard assessment and accident reporting guidelines as well as a review of state-of-the-art safety technology and methodology as it relates to field work such as earth moving, roofing, mechanical installation, scaffolding and ladders, administrative safety requirements, etc. Through open discussions and group participation, this course will bring together OSHA, Corps of Engineers, and consensus safety standards that apply to typical Corps activities and heighten safety awareness of field managers and supervisors, guiding them in their responsibilities for leading and managing safety.

Description.
The basic references for this course are the Corps of Engineers' Safety and Health Requirements Manual, EM 385-1-1, applicable OSHA and ANSI/ASME standards. This 3-day course will provide through various formats, information considered necessary and essential for project managers, area, resident, and project engineers, operations managers, supervisors and work team leaders in executing their day-to-day safety and health responsibilities. This course also has direct application for other Corps of Engineers field personnel in related career fields, e.g., supervisory rangers, drill crew foremen, lockmasters, hired labor supervisors, survey crew leaders, fleet superintendents, etc. Some of the specific topics covered in this course will include: (a) overview of EM 385-1-1; (b) legal aspects of employee safety for supervisors; (c) administrative safety and health requirements; (d) review of contractor safety submittals; (e) OSHA and the Corps of Engineers; (f) preparation of Accident Prevention Plans; (g) medical surveillance plans; (h) workers compensation program/alternatives; (i) personnel protective equipment; (j) specific safety standards for field work; (k) accident investigation and reporting; (l) confined space requirements;(m) industrial hygiene programs; and (n) USACE accident reporting responsibilities.

Prerequisites.
Nominees must be assigned (a) at the operating level in Corps of Engineers construction and/or operational activities; (b) Grade GS-09 or above; and (c) current or projected assignment as manager, supervisor, foreman, team leader or equivalent.

Scheduling Basics for Projects

Control Number: **143** Length: 32 Hours

CEUs: 1.7 PDHs: 17 PDUs: 17

Purpose.

The Corps of Engineers relies on project management principles to deliver meet the Nation's toughest challenges - scheduling techniques are key and essential to project management. The scheduling techniques that this course covers are useful for all projects. The course was primarily developed to introduce the concept of network scheduling to project managers, and it is so oriented in its examples. While this class does not provide a hands-on application of specific scheduling software, the course provides an introduction and understanding of basic network scheduling and manual and computer analysis in both original schedules and progress updates using typical P2 screens and information.

Description.

After completing the course, the student should be able (1) to prepare, review, analyze, and update network analysis systems, and (2) to make practical use of the information derived from the system. Through lectures and workshop sessions, the course covers schedule development and basic diagramming techniques; analysis of diagram for starting and finishing times; utilization of a network diagram for project control, determination of progress; effects of project delays; and changes in scope.

Prerequisites.

Nominees must be assigned (a) Occupational Series: Selected 0340, 0800, 0905, and 1100; (b) Grade: GS-09 or above. Students should have a current or projected assignment requiring knowledge of network analysis as a management technique. Prior knowledge of a network system or P2 is not required. This course is intended to meet the project scheduling requirement for Corps of Engineers PM certification at all levels (formerly covered by the Project Scheduling (NAS) course). This course is highly desirable for Project Managers and local configuration managers (LCM). Others that will benefit are Corps division and district engineers; division, branch, and section heads of project management, construction, operations, and engineering divisions; area engineers; resident engineers; office engineers; other quality assurance representatives; project and/or technical managers; and trial attorneys.

Seepage and Piping Analysis

Control Number: **250** Length: 36 Hours

Purpose.

This course trains Corps of Engineers designers and field engineers for seepage analysis, control, field problems in dams, levees, retaining walls, and slopes. This course is for both novice and experienced engineers. The course uses criteria in EM 1110-2-1901 and EM 1110-2-1913 and TM 5-818-5, supplemented by field experience.

Description.

The course will cover the principles of seepage through soils, related problems with erosion and piping, and methods for preventing and mitigating these problems. Specific topics will include Darcy's law, permeability of soils, flow nets, free surface problems, erosion and piping, filter criteria, remedial measures, and use of computer programs for design and analysis.

Prerequisites.

Nominees must be assigned: Occupational Series: Selected 0810 employed as geotechnical engineer - others can apply by requesting a waiver.

NOTE (2018-Oct-05): students must have a geotechnical educational background or at least 5 years of job experience in geotechnical evaluation. The supervisor for the student must ensure this requirement is followed in order for students to be sufficiently prepared for the class.

Seismic Design Buildings

Control Number: **27** Length: 36 Hours

Purpose.
This course is intended to provide structural engineers, who have a working knowledge of seismic design and analysis, with the updated criteria and guidance required to perform an analysis or design in accordance with current seismic criteria. The course material is based on IBC 2018 and ASCE7-16 and the latest UFC's. The course will be targeted to the design of new buildings, the analysis and remediation of existing buildings, the design or analysis of non-building structures and the design or analysis of building components and their anchorages such as piping, HVAC equipment, electrical components, infill walls, etc.

Description.
Through lectures and testing, this course presents (a) introduction of seismic design; (b) seismic design criteria; (c) seismic design procedures; (d) design of structural elements (including illustrative examples): (1) diaphragms, (2) walls, (3) frames, (4) masonry, (5) mechanical, electrical, and architectural elements. Students will be able to design/review seismic design analyses and drawings more efficiently upon completing this course. The manuals to be used are UFC 3-310-4, "Seismic Design for Buildings", and latest versions of IBC and ASCE, and UFGS Specifications addressing certain aspects of seismic issues.

Prerequisites.
Nominees must be assigned and/or have all of the following: (a) Occupational Series: 0810 and 0830. Waivers must be submitted for other occupational series; (b) Grade: GS-07 or above or equivalent. Course is open to Air Force and Navy personnel. Should be a practicing structural engineer.

Seismic Stability of Earthen Dams

Control Number: **247** Length: 36 Hours

Purpose.
This course provides Corps of Engineers personnel with the knowledge, skills, and abilities needed for assessing the seismic safety of Corps dams and levees along with other earth structures with state-of-the-practice analytical tools and procedures.

Description.
Through a series of lectures, case studies, and laboratory demonstrations, students will introduced to the following topics: (a) Introduction to USACE ER and EMs on earthquake engineering, (b) earthquake characteristics and earthquake ground motions; (c) site characterization; (d) site response analysis; (e) liquefaction assessment and post-liquefaction residual strength evaluation; (e) slope stability and seismic deformations; and (f) remediation alternatives.

Prerequisites.
Nominees must be assigned: (a) Occupational series: 0810 and 1350; and (b) Grade GS-09 and above.

NOTE (2018-Oct-05): students must have a geotechnical educational background or at least 5 years of job experience in geotechnical evaluation.

Services Contracting

Control Number: **89** Length: 24 Hours
CEUs: 2.0

Purpose.
The course objective is to reinforce the knowledge and skills for proper contract oversight, surveillance, compliance, and post-award documentation with emphasis on service contracts. Primarily this course is to mitigate risk by clarifying roles, responsibilities and accountability during post-award management. While the contracting officer is ultimately responsible for contract oversight, this course stresses the requirement to have properly trained and certified Contract Specialists, ACOs, and CORs. Through instruction and group exercises, students will gain the technical expertise needed to ensure these requirements are met.

Description.
Upon completion of the course, the student will be able to plan for post-award/contract administration oversight, identify roles and responsibilities of contracting authority and accountability for contracts/processes, technical proficiencies by acquisition team members, and fraud waste and abuse; ensure compliance, consistency, and oversight of documentation for quality management; check accuracy of timelines for oversight, checks and balances, and process/action verification; and validate approvals, pricing, and price reasonableness determinations.

Prerequisites.
Nominees must perform contract oversight and surveillance and assigned to Series 800, 1100, 1900, Project Managers, Legal Advisors, Performance Assessment Personnel, and subject matter experts (SMEs) serving as technical or performance monitors. NOTE: This course is not open to contractors.

Specifications for Construction Contracts

Control Number: **185** Length: 32 Hours
LUs: 26

Purpose.
This course provides instruction for preparing effective specifications for construction projects. The course is designed for engineers, architects, and technicians involved in the preparation of project specifications. The course covers principles of specification writing, procedures and techniques for writing specifications, and relationships of specifications to other elements of the contract documents. This course is strongly recommended for all design and supervisory personnel involved in development of project specifications.

Description.
Major subject matter topics include (a) language of specifications/written communication; (b) organization and format of specifications; (c) sources of technical information; (d) procedures, techniques, and methods of specification development; (e) guide specifications and project developed specifications; (f) contract clauses and contract interpretation; (g) relationship of contract drawings to specifications; (h) automated specification methods; and (i) regulatory and ethical considerations.

Prerequisites.
Nominees must be assigned (a) Occupational Series: 0800; (b) Grade: GS-09 through GS-13. Students should have current or projected assignments related to project specifications.

Statistical Methods in Hydrology

Control Number: **58** Length: 36 Hours

Purpose.
This course is designed for participants to become knowledgeable in the application of statistical methods used in the analysis of flood damage reduction, environmental, and water supply systems. Methods include advanced theory of frequency analysis, distribution fitting and testing, monte carlo simulation, stochastic streamflow generation, univariate and multivariate regression analysis, and regional analysis.

Description.
Topics covered include (a) distribution fitting and testing; (b) mixed population frequency analysis; (c) regulated flood frequency analysis; (d) regional frequency analysis; (e) monte carlo simulation for risk analysis (f) application of univariate and multivariate regression methods for regional analysis; and (g) time-series analysis and stochastic streamflow generation.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0800, 1300, and 1500; (b) Grade: GS-09 or above. Students must have had a college-level probability and statistics course to fully succeed.

Steady Flow with HEC-River Analysis System

Control Number: **114** Length: 36 Hours

Purpose.
The objective of the course is to enable the participants to perform water surface profile computations, for steady flow hydraulic analyses, using computer program HEC-RAS in a sound and effective manner.

Description.
This course teaches the concepts of open channel flow concepts, hydraulic model data requirements, HEC-RAS input requirements, laying out cross sections for 1D hydraulic modeling, application of bridge and culvert routines, calibration of a steady flow hydraulics model, floodway determination, an overview of Optional capabilities, and output analysis. The HEC-RAS software will be included in lectures and workshops. Participants have an opportunity to prepare input and analyze output during workshops.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0800 and 1300; (b) Grade: GS-05 or above. Nominees must be engineers who perform professional work in the fields of hydraulics and hydrology. Nominees should have one or more years of experience in these areas. Students should have had at least one (1) college level class in open channel Hydraulics. It is required that course participants be in positions or anticipate being in positions in the next year or two where they will be involved in water surface profile calculations.

Streambank Erosion and Protection

Control Number: **285** Length: 36 Hours
CEUs: 3.3 PDHs: 33

Purpose.
This course provides guidance to enable personnel involved in streambank erosion and protection projects to prepare for, organize, and conduct a field analysis of a streambank erosion problem; and design appropriate channel stabilization measures, including develop of alternatives and selection of the most appropriate designs.

Description.
This course provides project managers, planners, technicians, engineers, biologists, designers, regulators, and personnel involved in Section 14, 1135, and 206 projects the latest practical knowledge and design criteria for streambank protection and associated erosion control methods. Through a series of interactive lectures and field exercises the student will be introduced to the following subjects: fundamentals of fluvial geomorphology and river mechanics; streambed degradation protection measures; geotechnical consideration and design; environmental considerations when designing protection works; overview and design criteria of streambank protection measures (e.g., trench fill and windrow revetments, dikes, retards, longitudinal peaked stone toe, bendway weirs, and multiple biotechnical methods, among others); methods to analyze and select appropriate protection methods (or combination of methods); erosion control in dynamic environments; construction, monitoring, maintenance, and repair of streambank protection projects; and how to conduct reconnaissance of a streambank erosion problem. In conducting field exercises, students are taught how to plan for a stream reconnaissance, gather gage data and perform aerial photographic analyses, determine personal protection equipment and safety requirements, and how to gather and measure stream data. In this course, student teams are required to analyze, prepare, and present a streambank erosion problem, develop several alternative bank protection treatments, choose the most effective (or combination) treatment while taking into consideration the expected engineering performance, environmental ramifications, and cost effectiveness of the project.

Prerequisites.
The target audience for this course is employees in (a) Occupational Series: 0000-0100, 0400, 0800, 1300, and (b) Grade GS-05 or above, but the course is open to employees in any grade or occupational series.
SPECIAL INSTRUCTIONS: An important part of the class is a half-day field trip to investigate a local stream. Students will be required to climb streambanks and wade approximately one mile of stream over a period of 3 to 4 hours. ERDC-WES will provide needed field equipment.
Students should bring appropriate field clothes, a windbreaker, and rain gear.

Strength and Stability of Constructed Slopes

Control Number: **262** Length: 36 Hours
CEUs: 3.0 PDHs: 30

Purpose.
This course is intended for engineers who want an introduction to the subject of Strength and Stability of Constructed Slopes, as well as for those who would like to review the subject for better understanding. It is not intended for individuals who have never had a basic course in soil mechanics. For many individuals the relevance of the material they studied in college often does not meet the practical applications to the problems encountered in designing and constructing stable slopes. This course summarizes the subject matter into the essential elements of shear strengths required in stability analysis of embankment dams, levees, and slopes in open cuts or natural ground. Students completing this course will be better able to select appropriate shear strength designs in various cases for which stability analyses need to be performed. This course complements and enhances the training in dam safety.

Description.
This course provides instruction in the stress-strain relationship of soils as they are affected by soil composition (basic soil material), state (initial), structure, and Loading condition. The following topics are addressed: (a) Shear strengths, concepts, failure envelopes, and failure criteria; (b) Shear strengths of cohesionless soils; (c) Shear strengths of cohesive soils; (d) slope stability theories and analysis procedures; (e) design conditions and design criteria; (f) computational methods, including slope stability charts, (g) special analysis procedures for sudden drawdown; (h) methods and cases of Corps slope stability analysis and (i) Rock Slope Stability topics

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0810 (Geotechnical) or 1350 Geology; and (b) Grade: GS-07 or above.

NOTE (2018-Oct-05): students must have a geotechnical educational background or at least 1 year of job experience in geotechnical evaluation.

Sustainable Military Building Design and Construct

Control Number: **244** Length: 28 Hours
CEUs: 3.2 PDHs: 32

Purpose.
This course provides practical, hands-on training in this rapidly emerging and dynamic body of sustainability requirements that applies to all military construction. Trainees will gain understanding of the High Performance and Sustainable Buildings requirements (UFC 1-200-02)and become familiar with the Leadership in Energy and Environmental Design - Building Design + Construction(LEED-BD+C) project rating tool. This course will help develop a skill set of procedures trainees can employ to successfully implement sustainable design and third party certification in projects as well as defining the documentation requirements to demonstrate compliance with Federal Guiding Principles.

Description.
This course covers the following topics:
Federal mandates, Army Sustainable Design and Development (SDD) Policy, Air Force Policy. In-depth training on UFC 1-200-02 High Performance and Sustainable Buildings (HPSB) Requirements. Low Impact Development (LID). Incorporating HPSB in planning charettes, project delivery, contract documents and construction activities. Life-cycle cost analysis (LCCA), commissioning, energy analysis and strategies, sustainable technologies, water conservation, waste diversion and master planning. ASHRAE Standards 90.1 & 189.1, HPSB 'Guiding Principles' Checklist, LEED, Resiliency.

Prerequisites.
Attendees should be assigned as USACE architects, engineers, military project managers, cost engineers or construction field engineers. It is also applicable to Army and Air Force Installation master planners, environmental managers, energy managers and engineering staff. Nominees should have basic familiarity with USACE military design and construction process at the GS-09- 13 level.

The Complete RCRA Course (Hazardous Waste Generation Management and Corrective Action)

Control Number: **226** Length: 24 Hours

Purpose.
This course covers the full lifecycle of RCRA hazardous waste. It begins with generation and classification of hazardous waste, explains management standards as specified in Federal regulations (generator, transporter, and treatment, storage, and disposal facility standards), and the corrective action process as it applies to releases of hazardous waste and hazardous constituents.

Description.
The course focuses on Federal RCRA hazardous waste requirements as found in Title 40 of the Code of Federal Regulations. Topics covered include identifying solid and hazardous wastes, determining applicable generator category, generator standards including conditions for exemptions from permit requirements, land disposal restriction treatment standards, use of the hazardous waste manifest, and land disposal restrictions treatment standards. Additional topics include standards applicable to the facilities that receive hazardous waste for treatment, storage, or disposal; special regulations for managing recyclable waste; used oil; waste military munitions; universal waste; underground storage tanks; permit options; and the process for conducting corrective action. Phases of corrective action covered include identification of solid waste management units and area of concern, RCRA facility assessments, interim stabilization measures, the RCRA facility investigations, corrective measures studies, and corrective measures implementation. Special waste management options for remediation waste, such as corrective action management units, staging piles, and temporary units are also addressed.

Prerequisites.
There is no prerequisite to attending this course, however, the course is targeted at persons in environmental positions. Relevant job series include: 0800, 0809, 0810, 0819, 0820, 0025, 0026, 0028, 0029, 0401, 1301, 1350, 1306, and 1320. The training intended for persons with any of the following job responsibilities: hazardous waste (HW) determination, HW management, oversight of HW or hazardous constituents; applying for RCRA permits; and/or managing underground storage tanks.

Topographic Surveying Basics

Control Number: **295** Length: 36 Hours
CEUs: 3.0 PDHs: 30

Purpose.
This course provides surveyors, planners, designers, and CAD/GIS developers with a fundamental knowledge of basic conventional field surveying procedures and with the computational techniques needed to support civil works, military construction, and environmental restoration projects. It also supports USACE hydrographic, topographic, and real estate surveying activities. This course covers all basic surveying procedures typically required to support Corps design, construction, operations, and maintenance activities and supplements surveying knowledge required for A-E quality assurance.

Description.
Specific topics covered in the course include surveying mathematical concepts; the rectangular coordinate system; angle and distance measurement; traverse surveys in support of engineering design and field construction stake out; traverse computations and balancing methods; field taping; trigonometric and differential leveling field procedures and note reduction; state plane coordinate systems; topographic surveying techniques; map accuracies; electronic total stations; land boundary surveys; and error analysis.

Prerequisites.
Nominees should be assigned (a) selected positions in occupational series 1300 (Surveyors), 0800 (Engineers), 1100 (A-E Contract Administrators), 0150 (Geographers), 0400 (park rangers), and planners, designers, construction inspectors, and CAD/GIS developers involved with civil works, construction, and environmental restoration projects who require a basic understanding of survey procedures and computational techniques. Waivers will be considered. (b) Grade: GS-03 or above; (c) A general working knowledge of high-school-level algebra and trigonometry. and (d) A general working knowledge of scientific calculators for computing trigonometric functions and for converting degree-minute-second angular measurements to decimal equivalents.

Unsteady Flow using HEC-River Analysis System

Control Number: **188** Length: 36 Hours
CEUs: 3.2

Purpose.
This course focuses on the use of the computer program HEC-RAS for the analysis of one-dimensional gradually varied unsteady open channel flow. The role and application of this model in Corps flood studies is presented in lectures, workshops and examples.

Description.
Primary coverage is on one-dimensional open channel hydraulics. This covers the theory, applicability, limitations, and data requirements of the HEC-RAS unsteady flow program. Additional topics include: modeling bridges and culverts, inline and lateral hydraulic structures, storage areas, model calibration, model stability and accuracy, trouble shooting, and advanced features for Unsteady Flow Modeling (mixed flow regime, pump stations, dam and levee breaching). Case studies and computer workshops are used to illustrate model usage.

Prerequisites.
Nominees must be assigned (a) Occupational Series: Selected 0810 and 1300; (b) Grade: GS-07 or above. Nominees must have a good background in open channel hydraulics and familiarity with HEC-RAS. Basic HEC-RAS input and output data requirements will not be covered in this class. It will be assumed that you already know how to use the software for performing a steady flow analysis. Familiarity with the partial differential equations of fluid motion and numerical solution techniques is desirable. Participants should be in positions requiring analysis of complex hydraulic problems. Students should have at least one (1) college level class in open channel hydraulics.

USACE 30 HR Construction Safety

Control Number: **215** Length: 36 Hours

Purpose.
This course is designed to provide the USACE equivalent of the OSHA 30-hour Construction Safety Certification for field personnel that have construction safety and health responsibilities. Course provides information relative to the Corps Safety and Health Requirements Manual, EM 385-1-1 and pertinent Occupational Safety and Health Administration (OSHA) construction standards.
This course satisfies the CDSO training requirements per EM 385-1-1,.01.A.19.

Description.
This course will cover through lectures, discussions, practical exercises, and case studies, the major aspects of the Corps of Engineers construction safety and health program. Using extensive construction safety backgrounds, instructor staff will discuss and examine prudent application of EM 385-1-1 to construction field settings and problem areas. Safety topics covered during these sessions will include the following: (a) construction safety management; (b) trenching and excavation; (c) rigging and mechanized equipment; (d) fall protection; (e) scaffolding and access; (f) occupational health requirements; (g) confined space entry; (h) hand and power tools; (i) temporary electrical service; (j) control of hazardous energy; (k) activity hazard analyses; (l) contractor safety submittals; (m) welding and cutting; (n) QA/QC - safety relationship; (o) contractual safety requirements; and (p) Corps/OSHA relationships. Participants will gain an overall understanding of the various elements that comprise a successful construction safety program and be provided current state-of-art safety technology and methodology as it relates to the Corps of Engineers. Upon successful completion, students will receive a USACE 30-hour construction safety certification.

Prerequisites.
Attendance is open to all Department of Defense and other Federal agency employees who have a need for construction safety and health information or responsibility for enforcing contractual safety requirements. It is recommended that field construction personnel repeat attendance to this course on a three-five year cycle.

USACE 30 HR General Industry Course

Control Number: **63** Length: 36 Hours

Purpose.
This is a five day course offered through the United States Army Corp of Engineer (USACE) Proponent Sponsor Engineer Corp Training (PROSPECT). The course is designed to provide hazard recognition for field personnel who perform USACE facility operation or maintenance or oversee contractors doing such work. The course provides information relative to the Corps Safety and Health Requirements Manual, EM 385-1-1 and pertinent Occupational Safety and Health Administration (OSHA) General Industry Standards.

Description.
The course will cover through lectures, discussions, practical exercises and case studies, the major aspects of the Corps of Engineers safety and health program following the OSHA 30-hour general industry certification course template. Topics include: Managing Safety & Occupational Health Programs, Accident Reporting, Accident Prevention Plans, Workplace Assessments/Hazard Analysis, Walking/Working Surfaces, Fall Protection, Lockout/Tagout (LOTO) Procedures, Electrical Safety, Cranes & Rigging, Hand/Power Tools, Materials Handling, Welding/Cutting/Brazing Operations, Personal Protective Equipment, Medical Surveillance, Hearing Conservation Program, Respiratory Protection, Personal Protective Equipment, Hazard Communication Program, Machine Guarding, Permit Required Confined Spaces, and Class Project. Students that successfully complete the course will receive a 30 Hour General Industry Card.

Prerequisites.
Students should be from any occupation involved in performing, overseeing, or managing operation and/ or maintenance work at facilities, including maintenance units, shops, powerhouses, locks and dams, and other indutrial activities.

USACE Civil Works Project Development Process (Planning Core Curriculum Course 1)

Control Number: **86** Length: 8 Hours

Purpose.
This Distributed Learning (DL) online course introduces students to the life-cycle of Civil Works projects and an understanding of the Corps of Engineers civil works program. It is designed for Corps employees who are relatively new to Civil Works or individuals who require an overall understanding of, and the procedural stages involved in, the development of civil works projects.

Description.
The DL course has 5 modules. The five modules are: 1) Introduction to the US Army Corps of Engineers (Corps), 2)Civil Works Project Development Process Overview, 3) Feasibility Phase - Planning, 4) Design and Construction Phases, and 5) Operation, Maintenance, Repair, Rehabilitation, and Replacement Phase. The course includes one examination, which must be completed with a passing score of at least 80 percent. Students have unlimited attempts to complete the examination.

Prerequisites.
Nominees must be involved in or closely support any/all phases of civil works project development, project planning, project design, project construction, project management, or programs management and must be assigned (a) Occupational Series: Selected 0020, 0100, 0300, 0400, 0800, 0900, 1100, and 1300 series or others such as public affairs officers, real estate, or counsel that support the development process; (b) Grade: GS-05 or above. This course is the first training class for new or entry level employees in the CW Planning function. Nominees can be registered and can take the course at any time during the year.

USACE Dive Supervisor Course

Control Number: **37** Length: 74 Hours

Purpose.
This course provides USACE employees who are currently appointed as a district dive supervisor or assistant dive supervisor with the necessary skills, knowledges, and abilities to perform their assigned duties. This training will provide students with state-of-art technology and methodology to evaluate underwater diving operations and effectively manage diving contingencies. Students must satisfactorily complete all aspects of the training to receive certification.

Description.
Through lectures and demonstration sessions, this course covers (1) Identifying the roles and responsibilities of a dive supervisor; (2) Describe diving physics; (3) Describe the physiological influences of the underwater environment on the human diver; (4) Describe dive chamber operations; (5) Identify diving illnesses and preventive methods; (6) Identify dive equipment; (7) Inspect dive equipment; (8) Describe maintenance procedures for dive equipment, (9) Prepare dive calculations; (10) Identify risks associated with dive operations; (11) Plan dive operations; (12) Describe dive site management procedures; (13) Manage dive personnel; (14) Supervise the use of tools in dive operations; (15) Recognize dive medical emergencies; and (16) Plan medical support for dive operations.

Prerequisites.
Students for this course must be experienced divers and must have successfully served as a USACE working diver and have completed the Course #35 (Working Diver) or a commercially equivalent course. Students must participate in all lectures, written and practical exercises, and score at least 70 percent on the comprehensive post-course examination to pass the course. Exceptions or deviations to any of these prerequisites shall be approved by the HQUSACE Safety and Occupational Health Office.

VALUE ENGINEERING

Control Number: **110** Length: 40 Hours
CEUs: 3.5 PDHs: 35 LUs: 35

Purpose.
This course provides the participant with the concepts, principles, and skills necessary to enable the student to perform effectively as a value study team member; to recognize potential areas for Value Methodology/Value Engineering (VM/VE) opportunities; and to identify the value of utilizing VM/VE, regardless of profession.

Description.
Through lectures and hands-on workshop sessions utilizing small group interaction, this course provides the concepts and skills necessary to serve as an effective value study team member. This course is designed primarily for District and Regional Value Officers and staff involved in the Value Community of Practice. However, all disciplines and levels of management will benefit by participating in this course. This is an approved Value Methodology Fundamentals I (VMF-I) course, licensed by SAVE International. Participants who complete this course are eligible to take the Value Methodology Associate exam which is administered by SAVE International.

Prerequisites.
This training is mandatory for all USACE District and Regional Value Officers although other disciplines and occupational series such as 340, 800, and 1102 are encouraged to attend. This training is open to all agencies.

Visitor Assistance Management & Policy

Control Number: **324** Length: 28 Hours
CEUs: 1.8

Purpose.
This course provides an overview of the Corps of Engineers Visitor Assistance Program to promote consistency in Visitor Assistance policy application and explore alternative management techniques and practical applications. Ensuring continuity in the Visitor Assistance program being managed by Senior Management personnel at the Division, District, Area Office and Project level.

Description.
Topics covered in this course include the policy status and direction of the Visitor Assistance Program, Title 18, Title 36, Security/Law Enforcement issues, tactical communications, proper uniform wear, succession planning, community involvement, alternative management techniques, Visitor Assistance "Hot Topics"/What's New, and legal liabilities.

Prerequisites.
Employees who have attended the Visitor Assistance Management (Course #324)& Policy or NRM Visitor Assistance (Course #147) Courses within the past 5 years should not schedule this course. Attendees should be Visitor Assistance Program Managers, Operations Managers, Park Managers, Supervisory/Chief Rangers at the Division, District, Area and Project level who plan to provide oversight and manage the Visitor Assistance Program. Park Rangers/NRM Specialist, GS-9, may also attend, but they will be given a lower priority. It is recommended that Corps Security Specialists (GS-0080), Corps military personnel serving in a security capacity and Operational Project Managers attend the course to gain a better understanding of the Corps' Visitor Assistance Program.

VISITOR ASSISTANCE NRM

Control Number: **147** Length: 40 Hours
CEUs: 3.6

Purpose.
This course provides an overview of the Corps of Engineers Visitor Assistance Program to promote consistency in Visitor Assistance policy application and explore alternative management techniques and practical applications. Ensuring continuity in the Visitor Assistance program being managed by Senior Management personnel at the Division, District, Area Office and Project level.

Description.
Topics covered in this course include the policy status and direction of the Visitor Assistance Program, Title 18, Title 36, Security/Law Enforcement issues, tactical communications, proper uniform wear, succession planning, community involvement, alternative management techniques, Visitor Assistance "Hot Topics"/What's New, and legal liabilities.

Prerequisites.
Employees who have attended the Visitor Assistance Management (Course #324)& Policy or NRM Visitor Assistance (Course #147) Courses within the past 5 years should not schedule this course. Attendees should be Visitor Assistance Program Managers, Operations Managers, Park Managers, Supervisory/Chief Rangers at the Division, District, Area and Project level who plan to provide oversight and manage the Visitor Assistance Program. Park Rangers/NRM Specialist, GS-9, may also attend, but they will be given a lower priority. It is recommended that Corps Security Specialists (GS-0080), Corps military personnel serving in a security capacity and Operational Project Managers attend the course to gain a better understanding of the Corps' Visitor Assistance Program.

Water and the Watershed

Control Number: **164** Length: 36 Hours
CEUs: 2.7

Purpose.
This course provides participants with an understanding of the history of Corps watershed policy and regulation, the conceptual, technical, and institutional tools available for watershed planning and management and the physical nature 1and role of water in the watershed.

Description.
This course targets students who work on civil works project delivery teams for watershed studies, multi-purpose studies, masterplans, special area management plans and related activities. It aims to impart a broad understanding of the institutional policies, science and available tools for watershed management and planning. The course covers the occurrence, movement, storage, and control of water (surface and ground water hydrology); the natural development of the landscape (geomorphology); the concept of the watershed as a bioregion and ecosystem; the development of the water resources for multiple purposes; the restoration of natural features in wetlands and Corps' restoration projects; and the social, cultural and institutional elements of watershed management. Historical and current regulations and policies affecting the Corps' approach to watershed planning and management are covered. Conceptual tools discussed include adaptive management and collaborative management with other stakeholders to resolve water conflicts. Technical tools include methods and models available to simulate hydrologic and ecological features and for study management. The course will discuss the many active local organizations and federal agencies with a stake in the water of the watershed and the role of the Corps in watershed initiatives and partnerships.

Prerequisites.
Nominees normally are assigned to: (a) Occupational Series: Selected 800 and 400 series, 028, 819, 184, 101, 401, and 1301, (b) Grade GS-09 and above. Nominees should be planners/study managers, project managers, hydrologists, hydraulic or environmental engineers, biologists, economists, sociologists, ecologists, water control managers, etc.

Welding - Quality Verification

Control Number: **116** Length: 36 Hours
CEUs: 2.9 PDHs: 29

Purpose.
This course teaches the participant to interpret the various methods and techniques employed in weldments and assuring the quality of welds.

Description.
Through lectures, conferences, and practical exercise sessions, students are able to identify aspects of welding safety and precautions, welding symbols, processes and quality assurance problems, roof decking welding, codes, procedures, and operator qualification, filler metals, workmanship, visual inspection, dye penetrant, magnetic particles, radiographic and ultrasonic testing techniques and interpretation, and destructive testing. Quality assurance in welding is emphasized.

Prerequisites.
Nominees must be assigned and/or have all of the following: (a) Occupational Series: 0801, 0802, 0809, 0810, and selected 0800; (b) Grade: GS-05 and above; or equivalent (c) other: Students should have current or projected assignments with welding quality assurance responsibilities. It is recommended that they have previously completed the General Construction - Quality Verification course and must not have attended this or a similar course within the past 5 years.

Welding Design

Control Number: **162** Length: 36 Hours
CEUs: 3.4 PDHs: 33

Purpose.
The course teaches the participant, with a limited knowledge of welding or no background in welding, to create and draft replacement designs, to redesign or reinforce welding designs, and to communicate this information to field personnel.

Description.
The course covers design considerations and proper communication of welding processes, joint designs, weldability of metals, design methods, weld size determinations, weld costs estimating, design formulas, failure analysis of past design problems, and economics of welding.

Prerequisites.
Nominees must be assigned and/or meet all of the following: (a) Occupational Series: Selected 0800 and 1600; (b) Grade: GS-07 or above or equivalent; (c) have current or projected assignments requiring welding design and inspection responsibilities.

WETLAND RIVER FUNC/ECOL

Control Number: **426** Length: 32 Hours

Purpose.

In the development of the CE Water Resources Development Act (WRDA) projects and other important CE activities, NEPA-driven mitigation measures have required increasingly rigid, complex and watershed-level functional assessments of adverse unavoidable project impacts. Historically, structural (acre for acre) mitigation has been a surrogate for functional (maintain wildlife, habitat, flood flow restoration, water quality, etc) mitigation. This approach is no longer adequate due to the rapid evolution of ecological science and the design of functional assessment methods based upon watershed geomorphology, hydrology, vegetation, landforms and associated habitats. The hydrogeomorphic functional assessment method (HGM) is a Federal Interagency tool developed to address this critical field need. This workshop focuses on small and large riverine systems in eastern and western USA and additionally provides project managers with an introduction to the "new river ecology" knowledge. An understanding of this ecological approach is essential in meeting restoration, enhancement and mitigation objectives. A special section of the workshop will cover restoration alternatives identification and assessment of deeply incised channels and floodplains of selected river systems. Participants will meet and work in facilitated problem solving classroom and field sessions with noted experts in this field. Restoration concepts will be taught and they will be applied in on-site inspections and evaluations of actual restoration efforts.

Description.

Topics include: (1) Introduction to wetland river ecology, (2) HGM classification system, (3) HGM national and regional guidebooks, (4) Geomorphology of Mississippi River System, (5) River Ecology and HGM Assessment of Rivers in KY, TN, and MT, (6) Case studies restoration, (7) Lessons learned, (8) Mitigation Alternatives Identification/Assessment, (9) HGM and future WRDAs and other CE authorities (10) Calculating Habitat Units (11) Restoration Concepts and (12) Field-based practical evaluations of restoration efforts.

Prerequisites.

Nominees may be assigned from engineering, planning, natural resource management, regulatory, etc. to include program/project management functions within the Corps of Engineers. Occupational Series: Open to all including legal, real estate, navigation, etc. This workshop is designed to provide background introductory information. As 50% of the course is conducted in the field, students need to be of sufficent physical condition and health to wade in streams and rivers and climb over rocks and large woody debris. Students should have completed PROSPECT Course 192, Wetlands Ecology Basic, prior to attending this course.

Wetland Stream Ecology BASIC

Control Number: **192** Length: 32 Hours

Purpose.
A knowledge of the state-of-the-science wetland stream ecology is required to formulate science based Water Resources Development Act (WRDA) projects which are critical to the mission of the CE Civil Works Program. Additionally, NEPA (National Environmental Policy Act) and Clean Water Act (Section 404) driven wetland mitigation alternatives require an understanding of modern basic stream ecology which is holistic, landscape focused based on a systems approach to the biological, chemical, physical and geological components. Students will collect and identify wetland stream flora (botanical/plant) including the dominant vascular flowering plants and algae associated with streams. Laboratory and field work will be directed at identifying the benthic (bottom dwelling) stream macro and microinvertebrates important to stream water quality, nutrient cycling and food web linkages. A revolutionary new focus will be to develop a knowledge of stream geofluvial processes important to shaping and reshaping the active modern river channel and its associated floodplain in a geological time frame. Participants will meet on a one-on-one basic leading international and national experts in the field of stream ecology. Problem solving field exercises will be conducted and facilitated by these experts and class facilitators to develop an understanding of altered stream ecology and its impacts on selected ESA species inhabitating western river systems. Students will receive hands-on field training in the application and interpretaion of piezometers to understand the importance of upwelling and downwelling zones in a stream. This course is a prerequisite for PROSPECT Course 426, Wetland River Function and Ecology.

Description.
Topics include: (1) A holistic and landscape driven approach to wetland stream ecology, (2) Introduction to the identification of flora and fauna of wetland stream systems with a strong focus on western regional stream systems, (3) Introduction to the processes and effects of geofluvial morphology on stream systems, (4) Focus on stream water quality factors including nutrients, sediments and catchment areas, (5) Application of the new stream ecology knowledge to understanding and developing ESA (Endangered Species Act) mitigation alternatives ie Bull Trout, etc.(6) The importance of stream order, catchment size and location in a watershed upon the ecological dynamics-specifically aquatic food webs (7) Targeted daily field work to flowages of various stream order size and character re-inforce class instruction.

Prerequisites.
Noninees may be assigned from engineering, construction, regulatory, planning, natural resources, program and project management business lines and pacticies within the Corps of Engineers and other Federal Agencies. Occupational Series: Open to all including navigation, flood control and the environment. Due to the physical requirements of the field work integral to the course, potential students should be able to safely wade in flowing streams and rivers and negotiate rocks and large woody debris as the class traverses a range of waterbodies in field exercises.

Working Diver

Control Number: **35** Length: 114 Hours

Purpose.
This course provides Corps of Engineers employees who are assigned as divers, diver supervisors, and/or agency diving coordinators with the necessary skills, knowledges, and abilities to safely perform their assigned underwater tasks. This training will provide students with state-of-art technology and methodology to safely perform underwater diving operations and effectively manage diving contingencies.

Description.
Students will become familiar with and perform underwater exercises with state-of-art diving systems including self-contained underwater breathing apparatus (SCUBA) and Surface Supplied Air equipment. This course consists of classroom presentations, training pool exercises, open water activities, and practical operations. Sessions pertinent to underwater diving operations will include, but are not limited to, the following topics and activities: (a) regulatory requirements, (b) dive planning, (c) inspections, (d) deep dive, (e) identification and use of Activity Hazard Analysis, (f) dive preparation, (g) diving physics/gas laws, (h) diving physiology, (i) diving psychology and types of stress, (j) diving medicine, (k) SCUBA equipment use and operations, (l) Surface Supplied Air equipment, (m) decompression actions, equipment, principles and associated types of tables, (n) diving accident management, and (o) dive operations.

Prerequisites.
(a) Students for this course must have a current or projected assignment to a position requiring underwater diving skills and prior to attending this training must hold a SCUBA training certificate or equivalent from a nationally recognized diver training organization, e.g., PADI, NAUI, etc. Failure to provide evidence of diver certification will be cause for rejection; (b) Nominees must successfully complete a diving medical examination as detailed in ER 385-1-86 within the past 11 months and provide a copy of the completed medical form to the training agent at least two weeks prior to the class start date; (c) proof of the last four government dives within the last 11 months; and (d) students must participate in all lectures, written and practical exercises, and score at least 70 percent on the comprehensive post-course examination, two diving practical examinations, and quizzes administered during the course to receive the diver certification. Exceptions or deviations to any of these prerequisites shall be approved by the HQUSACE Safety and Occupational Health Office.