SSEN - SUBSEA ENGINEERING

SSEN 630 Fundamentals of Subsea Engineering
Credits 3.3 Lecture Hours. Orientation to subsea engineering fundamentals; includes SURF (Subsea, Umbilicals/Controls, Risers, Flowlines) equipment and configurations; exposure to practical, industry focused problems; subsea equipment components; design considerations and design drivers; subsea production operations; integrity critical maintenance activities. Prerequisites: Graduate classification, enrollment in the College of Engineering or approval of instructor.

SSEN 632 Subsea Project Implementation
Credits 3.3 Lecture Hours. Overview of the realization of a subsea development project; includes all stages from discovery to pre-commissioning of the subsea infrastructure. Prerequisite: SSEN 630 or concurrent enrollment.

SSEN 633 Transition from Fossil Fuels
Credits 3.3 Lecture Hours. Current status of energy supplies; overview of energy source trends and forecast of what will be seen in the future; examine renewable energy sources, their technology, what the challenges are and how will these be overcome; appraisal of how the transition will be founded on what we are doing now.

SSEN 640 Subsea Hardware Design
Credits 3.3 Lecture Hours. Basic elements (bolting, seals, flanges & hubs, valves, fittings, connections, and actuators) that make up subsea hardware assemblies; understanding of how these elements work together in a system. Prerequisites: SSEN 630 or concurrent enrollment or approval of instructor.

SSEN 641 Subsea Umbilical and Control System Design
Credits 3.3 Lecture Hours. A practical view of subsea umbilical and controls system project realization from concept selection through installation and offshore acceptance testing. Prerequisite: SSEN 630, or concurrent enrollment.

SSEN 642 Subsea Pipeline Design
Credits 3.3 Lecture Hours. A practical view of pipeline project realization from concept selection through installation and offshore acceptance testing. Prerequisites: SSEN 630, or concurrent enrollment, or approval of instructor.

SSEN 643 Subsea Riser Design
Credits 3.3 Lecture Hours. A practical view of riser project realization from concept selection through installation and offshore acceptance testing. Prerequisites: SSEN 630, or concurrent enrollment, or approval of instructor.

SSEN 646 Applied Reliability Engineering for Subsea Systems
Credits 3.3 Lecture Hours. Overview of the application of reliability engineering to subsea system and all stages from discovery to pre-commissioning of the subsea infrastructure; exposure to practical, industry focused problems; risks and mitigation steps to reduce possibility of an accident or hazard; FMEACA, root cause analysis, TRLs, Risk Based Inspection (RBI) and Risk Based Integrity Management concepts, asset integrity and ALARP concepts, fault tree analysis, Principles of Safety Integrity Level (SIL). Prerequisite: SSEN 630 or concurrent enrollment, or approval of instructor.

SSEN 650 Flow Assurance and Operability of Subsea Systems
Credits 3.3 Lecture Hours. Hydrocarbon production and transport from offshore fields to the host facilities, including prevention and remediation of phenomena that hinder fluid flow in production systems; subsea architecture, hydrodynamic and thermal considerations, reservoir fluid characterization and analysis, solids management, thermal hydraulics and production chemistry. Prerequisites: SSEN 630 or concurrent enrollment, or approval of instructor.

SSEN 651 Subsea Production Operations
Credits 3.3 Lecture Hours. Multiphase hydrocarbon production and transport from offshore fields to host facilities under both steady-state and transient conditions; includes reservoir and SURF system management through chemical gas and water injection, surface and subsea processing, testing and maintenance through all phases of a subsea development. Prerequisites: SSEN 630 or concurrent enrollment, or approval of instructor.

SSEN 655 Applied Subsea Business Management
Credits 3.3 Lecture Hours. Provides an overview of how subsea engineering is funded and managed in the current environment. Must be taken on a satisfactory/unsatisfactory basis. Prerequisite: SSEN 630 or concurrent enrollment, or approval of instructor.

SSEN 656 Stochastic and Deterministic Methods
Credits 3.3 Lecture Hours. Presentation of techniques for solving real-world subsea project problems. Must be taken on a satisfactory/unsatisfactory basis. Prerequisite: SSEN 630 or concurrent enrollment, or approval of instructor.

SSEN 660 Fundamentals of Subsea Processing
Credits 3.3 Lecture Hours. Overview of subsea processing; introducing students to the latest topics in subsea engineering. Must be taken on a satisfactory/unsatisfactory basis. Prerequisite: SSEN 630 or concurrent enrollment, or approval of instructor.

SSEN 681 Professional Development Seminar-Subsea Engineering
Credit 1.0 Lecture Hours. 1 Other Hour. Professional seminar introducing students to the latest topics in subsea engineering. Must be taken on a satisfactory/unsatisfactory basis. Prerequisite: SSEN 630 or current enrollment, or approval of instructor.

SSEN 684 Professional Internship
Credits 1 to 10. 0 Lecture Hours. 1 to 10 Other Hours. Supervised experience of one academic year in industry where students can learn to apply their textbook-based skills to problems in the real-world environment. Must be taken on a satisfactory/unsatisfactory basis. Prerequisite: SSEN 630 or approval of instructor.

SSEN 685 Directed Studies
Credits 1 to 6. 1 to 6 Other Hours. Design or research problems related to subsea engineering. Prerequisite: Graduate classification; approval of program director or designate.

SSEN 691 Research
Credits 1 to 23. 1 to 23 Other Hours. Research in the area of subsea engineering. Must be taken on a satisfactory/unsatisfactory basis. Prerequisite: Graduate classification; approval of program director or designate.