Postgraduate Certificate in Advanced Subsea Engineering for Oil and Gas

Subsea Systems Installation and Maintenance

Subsea systems installation and maintenance is a critical aspect of the oil and gas industry. The following terms and vocabulary are essential for understanding the postgraduate certificate in advanced subsea engineering for oil and gas.

1. Subsea Systems: Subsea systems refer to the equipment and infrastructure used in the extraction, processing, and transportation of oil and gas from under the sea. These systems include Christmas trees, manifolds, jumpers, flowlines, and umbilicals.
2. Christmas Tree: A Christmas tree is a collection of valves and fittings installed at the wellhead to control the flow of oil and gas from the well. It includes a master valve, wing valves, choke valves, and various fittings and connections.
3. Manifold: A manifold is a subsea structure that distributes fluid from multiple wells to a single pipeline. It includes valves, fittings, and connections that allow for the control and direction of fluid flow.
4. Jumper: A jumper is a short pipeline that connects a subsea Christmas tree to a manifold or other subsea structure. It is typically made of flexible pipe and includes connections at both ends.
5. Flowline: A flowline is a pipeline that transports oil and gas from a subsea well or manifold to a processing facility or storage vessel. It is typically made of steel or flexible pipe and includes various fittings and connections.
6. Umbilical: An umbilical is a cable that provides power, control, and communication signals to subsea equipment. It includes various components such as electrical conductors, fiber optic cables, and hydraulic hoses.
7. Installation: Installation refers to the process of deploying subsea equipment and infrastructure on the seabed. This includes the use of specialized vessels, equipment, and techniques to ensure the safe and efficient installation of subsea systems.
8. Maintenance: Maintenance refers to the ongoing inspection, testing, and repair of subsea equipment and infrastructure. This includes the use of remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), and other subsea equipment to perform inspections, repairs, and maintenance activities.
9. ROV: An ROV is a remotely operated vehicle used for subsea inspections, repairs, and maintenance activities. It is typically equipped with cameras, manipulator arms, and various sensors and tools to perform a range of tasks.
10. AUV: An AUV is an autonomous underwater vehicle used for subsea inspections, surveys, and data collection. It is capable of operating without human intervention and can cover large areas of the seabed in a short amount of time.
11. Dynamic Positioning: Dynamic positioning is a system used to maintain the position of a vessel in relation to a fixed point or object. It uses a combination of thrusters, propellers, and sensors to maintain the vessel's position and heading.
12. Saturation Diving: Saturation diving is a technique used for deep-sea diving where divers live and work in a pressurized environment for extended periods. It allows divers to work at greater depths for longer

periods without the risk of decompression sickness.
13. Hot Tap: A hot tap is a technique used to connect to a live pipeline or system without interrupting the flow of fluid. It involves the use of specialized equipment and techniques to create a new connection while the system is still operational.
14. Hyperbaric Welding: Hyperbaric welding is a technique used for welding subsea equipment and infrastructure at great depths. It involves the use of specialized equipment and techniques to maintain a stable and controlled environment while welding.
15. Diving Bell: A diving bell is a submersible chamber used for transporting divers to and from subsea equipment and infrastructure. It is typically lowered to the seabed, where divers enter and exit the chamber to perform their work.
16. Free Span: A free span is a section of pipeline or cable that is not supported by the seabed or any other structure. It can result in excessive motion and stress on the pipeline or cable, leading to potential failure.
17. Mattresses: Mattresses are large bags filled with sand or other materials used for subsea stabilization and protection. They are typically placed around pipelines or cables to provide additional support and protection from damage.
18. Conductor: A conductor is a large-diameter pipe used to support and guide the drilling of a well. It is typically installed before the wellhead and provides a stable foundation for the drilling and completion of the well.
19. Pigging: Pigging is a technique used for cleaning and inspecting pipelines. A pig is a device that is inserted into the pipeline and propelled through the system by the flow of fluid. It can be used for various purposes, including the removal of wax, debris, and other materials from the pipeline.
20. Corrosion: Corrosion is the deterioration of metal due to chemical reactions with its environment. It is a significant concern in subsea systems, as it can lead to leaks, failures, and other safety hazards.

In summary, subsea systems installation and maintenance is a critical aspect of the oil and gas industry, requiring a deep understanding of various terms and vocabulary. From Christmas trees to corrosion, the above terms and concepts are essential for anyone looking to pursue a postgraduate certificate in advanced subsea engineering for oil and gas. Through the use of ROVs, AUVs, and other specialized equipment, subsea engineers can ensure the safe and efficient installation and maintenance of subsea systems, minimizing downtime and maximizing productivity.