NOC: Risk and Reliability of offshore structures - Video course

COURSE OUTLINE

Considering the importance of offshore structures, one has to recognize that there are other intrinsic uncertainties such as material properties, analysis methods, design procedures etc, which are addressed rationally. A detailed knowledge of reliability of offshore structures using probabilistic tools becomes need of the hour for both industry and academia. Offshore activities, on one hand, lead to increase in societal wealth, and, on the other hand, make society vulnerable to risks. An offshore engineer is usually accountable for the decisions that he takes. A hallmark of professionalism is to quantify the risks and benefits involved. The present course aims to introduce the basics of the structural reliability analysis procedures. The Registrants would benefit from the course by learning the basics of reliability-based design and principles underlying code calibration, which would provide the groundwork to embark upon research in this field. Key focus will be on safety and reliability issues of offshore facilities during analysis and design, inspection and planning.

COURSE DETAIL

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<th>ModuleNo.</th>
<th>Topics</th>
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| 1.        | Concepts of probability  
            Sampling statistics  
            Types of uncertainties  
            Modeling random variables like loads, material properties etc  
            Introduction to classical reliability theories  
            Error estimation |
| 2.        | Levels of reliability  
            Reliability estimates  
            FOSM, AFOSM and application problems  
            Codes of practice of safety check  
            Reliability bounds of structural systems  
            Treatment of geometric variables  
            Probabilistic methods of code calibrations |
| 3.        | Application to offshore structures  
            Stochastic process  
            Gaussian process  
            Risk assessment  
            Hazard identification  
            ETA, FTA  
            Risk modeling and Risk picture  
            Probabilistic risk assessment |

References:

a) Text books:

Research articles

specific systems and software engineering technology (ASSET '98). TX: Dallas; 1998.
19. Helminen A, Pulld