ABOUT THE COURSE

The main application for materials possessing high strength-weight ratio are in structural engineering, transport and portable appliances. Cost savings is one of the criteria for successful structural engineering and transport application. The use of strong but lightweight members helps to achieve this in that the overall stress levels in a construction are reduced together with handling, manipulation and pay-load cost. These factors are important in such applications as bridges, ships, high speed vessels, rail and transport carriers.

As light-weight applications mean the use of strong but low-density materials, alloys of aluminium are generally used. However, new approaches in fabrication techniques are leading to high use of fibre-reinforced plastics.

COST

Course fee will be £650 (plus VAT for UK residents) which includes course notes and lunches. The fee doesn’t include accommodation. You should make your own arrangements for accommodation.

VENUE

Croydon Park Hotel
7 Altyre Road, Croydon, Greater London
CR9 5AA
(All Delegates entitled to a special rate of £3 per car for full days parking)

Course Outline

Monday 5th September 2016

9:00—10:30
Lecture 1: Introduction to Composite Materials
By N. Sampathkumar
Introduction: Products & Structures - Basic Definitions and Classifications – Constituent materials and types of composites – Reinforcements and Fillers

10:45—12:15
Lecture 2: Fundamentals of Composite Structures
By N. Sampathkumar
Mechanics of Composite Structures – Linear elastic Stress-Strain characteristics of FRP Composites – Stress-Strain concepts in 3D – Anisotropic Elasticity – Plane stress 2D elasticity concept – Theory of Laminates

13:30—15:00
Lecture 3: Selection of Composite Materials
By N. Sampathkumar
Selection criteria for Composite Materials – Advantages and limitations of Composites – Comparison among the types of Composite materials and its applications – Manufacturing process of various Composite Structures – Testing methods – Codes & Guidelines for Design/Applications

15:30—17:00
Lecture 4: Analysis & Design of Composite Structures
By N. Sampathkumar

Tuesday 6th September 2016

9:00—10:30
Lecture 5: Introduction to Aluminium Structures
By Purnendu Das
Introduction to material properties of aluminium. Applications in various aspects. Different types of structural components such as stiffened plates, beam columns

10:45—12:15
Lecture 6: Design for Buckling & Strength for Aluminium Structures
By Purnendu Das
Behaviour and performance of aluminium structures in different loading conditions.

13:30—15:00
Lecture 7: Application of Composites in Industrial Structures – I
By N. Sampathkumar
Applications in Transportation systems, Civil Engineering Structures, Industrial, Aerospace and Health diagnostics

15:30—17:00
Lecture 8: Application of Composites in Industrial Structures – II
By N. Sampathkumar
Applications in Offshore Oil and Gas, Sub-sea structural components, Onshore/Offshore Wind turbine components and in Defence
ABOUT THE LECTURERS

Narasimhan Sampathkumar  BE, MSc, PhD has 12+ years of Structural Engineering experience, especially in Advanced Finite Element methods and holds Doctorate from Southampton University, Southampton, UK. His research concerned with Three dimensional geometrical and material nonlinear finite element analysis of adhesively bonded joints for marine structures from Fluid-Structure Interactions Research Group. Besides extensive experience in the field of Finite element analysis while working earlier with Araya Inc and Caterpillar Inc, Dr Sampathkumar has been in the field of Renewable Wind energy since 2007 at various firms and at various positions as Blade Specialist, Product Manager for 1-3MW Onshore Wind turbines and also as Lead Principal Engineer for analysis and design of Offshore substructures for Wind turbines. Presently he is with Atkins as a Principal Structural Engineer for Offshore Renewables. Dr Sampathkumar is familiar with wind turbine Loads, Aerodynamics & Control simulations, Strength calculations of wind turbine components and jacket structure, Power performance, Turbine testing & Measurement, IEC61400 and DNV-GL codes for Certification process. Involved with structural design of Wind Turbine components such as Blade, Castings Hub and Main Frame, Gearbox-Generator structural elements, Tower and Foundation. Since 2012 his projects included conceptual and detailed design of substructures like Jacket and Monopile for large Offshore Wind Turbines. He has been studying dynamic response between wind turbine and offshore substructures with keen interest and has been implementing various method of coupled analysis on different projects. He has ten publications across international journal and conference presentations.

Purnendu Das  BE, ME, PhD, C.Eng, C.MarEng, FRINA, FIStructE, FIMarEST has been the Director of ‘ASRANet Ltd’ (an ISO 9001-2000 certified company) since February 2006. He retired as a Professor of Marine Structures in the Department of Naval Architecture & Marine Engineering at the University of Strathclyde, UK in September 2011. Past EU projects were MARSTRUCT (a network of excellence on Marine Structure) and SHIPDISMANTL (a cost effective and environmentally friendly dismantling of ship structures). Past industrial projects included work from the UK Health and Safety Executive (HSE), MoD UK, Subsea-7 UK, Shell, Woodgroup and US Navies etc. He was the principal investigator of many EPSRC projects. Before joining the University of Glasgow in 1991 he worked with British Maritime Technology as Principal Structural Engineer (1984-91). He is the author of more than 250 publications, including contract reports and more than 60 journal papers and is a member of the editorial boards of the ‘Journal of Marine Structures’, ‘Journal of Ocean and Ship Technology’ and ‘Journal of Ocean and Climate System’ and the Journal of Ship Mechanics amongst others. His areas of research include limit state design and analysis & reliability analysis of ship & offshore structures. Purnendu Das has wide ranging industrial and academic contacts and has advised and supervised 20 PhD students, to his credit. Details of visits and collaborations include his various sabbatical study periods spent at University of California, Berkeley, USA (July – September 1996), at Lloyd’s Register of Shipping (August 1997), Kockums Ltd (July 1998) and spent some time at Instituto Superior Técnico (IST), Lisbon (July 2000). He is running about 20 CPD courses which are attracting many people from different industries. These courses are on ‘Fatigue & Fracture Analysis’, ‘Ships at Sea’, ‘Advanced Analysis and Design of Offshore Structures’, ‘Offshore Floating System Design’, ‘Structural Response under Fire and Blast Loading’ and ‘Design of Pipelines and Risers’ amongst others. He was a member of ISSC (International Ship and Offshore Structure Congress) for the periods of 1991-97 and 2003-2006. He was a member of the OMAE (Offshore Mechanics and Arctic Engineering) Organising Committee on ‘Safety and Reliability’. He is running about 15 bi-annual international conferences on various themes like Risk, Reliability, Advanced Analysis & Design of Engineer- Structures, including marine structures. He was a member of the “Research Committee” of Structural Engineers (InstEC) during 2012-2015. He was a visiting Professor at IST Surabaya, Indonesia from July 2015 for one year. He is now a visiting professor at the Wuhan University of Technology, China from July 2016.

REGISTRATION

☐ I wish to register for the course at a cost of £650 (Plus VAT for UK residents) including course material and workshop lunches.

Payments can be made by cheque (made payable to ASRANet Ltd.), cash or bank transfer but no card payments. Please enquire for details.

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The completed form should be sent to: info@asranet.co.uk OR to ASRANet Ltd, 5 St Vincent Place, Glasgow, G1 2DH, UK