

Principles and methods for design of welded structures

eCourse
NOW AVAILABLE



With the advent of greater demand for online training, HERA, IIW India, SAIW and the CWB Association are cooperating and collaborating to transfer the knowledge and experience of world experts into as many countries on a global basis.

The four organizations will arrange for eCourses to be presented by such world experts to meet the challenges of different time zones, the need to assist individuals and industries to optimize their training times as well as improve their national welding capabilities.

You can make enquiries and bookings with each organization offering the course most suitable for

your needs. Links for registration are given later in this brochure.

The first eCourse to be offered is in a series of three by world expert, Professor Pingsha Dong, University of Michigan, USA.

Contacts at each organization for more detailed discussion on all future eCourses to be organized are:

Michail Karpenko • HERA • Email: mkarpenko@hera.org.nz • Asia and Australasia

Max Ceron • CWB Association • Email: Max.Ceron@cwbgrouop.org • Americas

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Principles and methods for design of welded structures

PRESENTER: PROFESSOR PINGSHA DONG
University of Michigan, Ann Arbor, Michigan, USA

This eCourse will address fundamental aspects that engineers should know when it comes to designing welded joints by incorporating key findings resulted from most recent research developments in analytical and computational modelling of welded joints and welding processes. Proper design and cost-effective construction of welded connections require considerations of some of the unique issues associated with welding, in addition to specific loading environments. These are weld in-situ

strength, residual stresses, and geometric discontinuities, each of which plays a different role in contributing resultant joint strength, and fatigue/fracture resistances under different loading conditions, particularly fatigue loading. The eCourse will be presented in four 2 hour sessions that also includes Q&A. It will also delve into the numerous problems encountered in welded connections and address the “hot topic” how to achieve satisfactory weld performance by smart design.

Prof. Pingsha Dong of University of Michigan, is the inventor of the mesh-insensitive structural stress method (also referred to as the Master S-N Curve Method) adopted by the 2007 ASME Div 2 and API 579/ASME FFS-1 Codes and Standards mandated by over 50 countries worldwide. Over the past 10 years, Prof. Dong has taught courses in fatigue design, fracture control, residual stress/distortion control in over a dozen countries around the globe. Prof. Dong has published more than 260 peer-reviewed papers in archive journals and major conference proceedings, including over 20 plenary/keynote lectures at major international conferences. He has received numerous prestigious national and international awards/recognitions, including AWS Comfort Adams Lecture Award (2019), SNAME Helmer L. Hann Awards (both in 2012 and 2007), IIW Evgeny Paton Prize (2008), R&D Magazine's R&D 100 Award (2006), TIME Magazine's Math Innovator (2005), Aviation Week and Space Technology's Aerospace Laurels Award (2004), SAE Henry Ford Award (2003), AWS R.D. Thomas Award, and ASME G.E.O Widera Literature Award (2002), among many others. In addition, he is also a Fellow of ASME, AWS, and IIW.



Who Should Attend?

Designers, structural engineers, consultant engineers, mechanical engineers, maintenance and quality control engineers, as well as researchers. Delegates are encouraged to bring along their design problems to contribute to discussions and local case studies.

What Industry Areas The eCourse Is Relevant For?

The eCourse will be especially relevant to all professionals in automotive, aerospace, steel construction, bridge design, power generation, naval and shipbuilding, pipeline and other industries that apply welding.

eCourse Programme

This live eCourse will include 4 x 2 hour sessions including Q&A (8hours). The eCourse will be hosted via Zoom/Teams, with login details supplied upon registration.

Part 1: Unique issues associated with welded joints and design implications

- Challenges in design and structural integrity evaluation of welded connections
- Basis of joint design rules in major codes and standards
- Applications and limitations for design of fillet and butt welds
- Weld imperfections
- Defect acceptance criteria: empirical versus recent quantitative methods
- Real-world examples

Part 2: Basic considerations in design of welded joints and analysis methods

- Treatment of stress concentration
- Analysis methods for design evaluation of welded joints
- Weld sizing criteria
- Joint performance evaluation and testing considerations
- Residual stress and distortion control techniques

Part 3: Joint design for static and fatigue performance

- Modern analysis methods
- Static and very low cycle fatigue
- High cycle fatigue
- Principles of joint design for improved fatigue resistance
- Best practice examples and joint detailing for improved fatigue resistance

Part 4: Residual stress and distortion control in construction

- A simple and effective treatment of residual stress and distortion generation mechanisms
- “5S” principles and underlying physical basis for distortion control
- Case studies: automotive, aerospace, civil structures, ship/offshore structures, etc.
- Overall course summary

Earn PDHs and CEUs with our Professional Development eCourse

Upon completion of 4 eCourse modules, the attendees will receive an electronic Course Completion Certificate that might be used to claim PDHs or CEUs.

EVENTS FOR AMERICAS

Course part	Course Date	Location / time zone / starting time
1	21 September 2021	Toronto/Michigan (EST): 2:00 pm - 4:00 pm Calgary & Edmonton (MST): 12:00 pm - 2:00 pm Regina (CST): 11:00 am - 1:00 pm West Coast Canada and USA (PST): 11:00 am - 1:00 pm Atlantic Canada and USA: 3:00 pm - 5:00 pm Sao Paulo: 3:00 pm - 5:00 pm Brazil: Santiago Chile (GMT): 3:00 pm - 5:00 pm
2	23 September 2021	
3	28 September 2021	
4	30 September 2021	

• **Registration link:** www.eventbrite.ca/e/principles-and-methods-for-design-of-welded-joints-tickets-162694919885

CLICK HERE TO REGISTER

EVENTS FOR AFRICA AND EUROPE

Course part	Course Date	Location / time zone / starting time
1	12 October 2021	Johannesburg-CET: 2.00 pm - 4.00 pm Nigeria-London: 1.00 pm - 3.00 pm Istanbul: 3.00 pm - 5.00 pm
2	14 October 2021	
3	19 October 2021	
4	21 October 2021	

• **Registration link:** www.saiw.co.za/principles-and-methods-for-design-of-welded-joints-presented-by-prof-pingsha-dong-e-course-registration-form/

CLICK HERE TO REGISTER

EVENTS FOR ASIA AND AUSTRALASIA

Course part	Course Date	Location / time zone / starting time
1	10 November 2021	Auckland: 1:00 pm - 3:00 pm Sydney: 11:00 am - 1:00 pm Perth: 8:00 am - 10:00 am Singapore: 8:00 am - 10:00 am Bangkok: 7:00 am - 9:00 am Seoul: 9:00 am - 11:00 am Tokyo: 9:00 am - 11:00 am
2	12 November 2021	
3	17 November 2021	
4	19 November 2021	

• **Registration link:** www.hera.org.nz/events/

CLICK HERE TO REGISTER

EVENTS FOR SAARC AND MIDDLE EAST

Course part	Course Date	Location / time zone / starting time
1	7 December 2021	India & Sri Lanka: 16.30 pm - 18.30 pm Bangladesh: 17.00 pm - 19.00 pm
2	9 December 2021	Saudi Arabia, Oman, Kuwait, Bahrain: 14.00 pm - 16.00 pm
3	13 December 2021	UAE-Dubai, Sharjah, Abu Dhabi: 15.00 pm - 17.00 pm
4	16 December 2021	

● **Registration link:** <http://tinyurl.com/pmdwsindia>

CLICK HERE TO REGISTER

Cost

The course registration fee per participant is \$500.00 payable in US dollars or the equivalent amount in the regional organizer's local currency, plus any local taxes requiring to be paid in the regional organiser's country.

Participants will receive a set of notes for each course part in pdf format.

REGISTER TODAY

To register, follow the registration links for regions below:

- **Asia and Australasia:** www.hera.org.nz/events/
- **Americas:** www.eventbrite.ca/preview?eid=162694919885/
- **Africa and Europe:** www.saiw.co.za/principles-and-methods-for-design-of-welded-joints-presented-by-prof-pingsha-dong-e-course-registration-form/
- **SAARC and Middle East:** <http://tinyurl.com/pmdwsindia>

Cancellations

Please Note: cancellations within seven (7) working days of the start of the events, 100% of the fees will be charged. Replacement delegates may be sent however in lieu of those cancelled. The organizers reserve the right to cancel the courses due to insufficient registrations or other reasons beyond their control, as well as altering the programme if they deem it necessary. The organizers have the right to refuse registrations.

Future WIN eCourses to be held in 2022 with Prof Pingsha Dong;

“Residual Stress And Distortion Control”

“Advanced Fatigue And Fracture Analysis Methods”

Dates to be advised after November 2021

Upon completion of 4 eCourse modules, the attendees will receive an electronic Course Completion Certificate that might be used to claim PDHs or CEUs.