



**New Special lecture start 2018 April**

## **Brazil-Japan Collaborative Program on Naval Architecture and Offshore Engineering**

A new education program on Naval Architecture and Offshore Engineering was launched in April 2016, together with **5 Brazilian and 5 Japanese Universities** using a remote lecture system, with the support of Re-Inventing Japan Project "Support for the formation of Collaborative Programs with Universities in Latin America". This program is designed for all UFSC undergraduate and graduate students, former students, teachers, technical and administrative support staff interested in expanding their knowledge in Naval Architecture and Offshore Engineering. Three courses will be offered this semester (2018.01), beginning in April. With the cooperation agreement between UFSC and U-Tokyo signed in 2016, all who successfully complete two full courses of the program will receive a certificate from U-Tokyo.

### **Course 01 : Risers and Pipelines (full course)**

Where : U155  
When : 08:00-09:30 (Mondays and Wednesdays)  
Start : April 9  
Duration : 15 weeks  
How : The lecture is given in English.  
Cost : Free

### **Course 02 : Subsea Well Construction and Petroleum Production Systems (full course)**

Where : U155  
When : 08:00-09:30 (Tuesdays and Thursdays)  
Start : April 5  
Duration : 15 weeks  
How : The lecture is given in English.  
Cost : Free

### **Course 03 : Introduction of Ocean Energies and Environments (half course)**

Where : U155  
When : 08:00-09:30 (Fridays)  
Start : April 6  
Duration : 15 weeks  
How : The lecture is given in English.  
Cost : Free

Interested in attending this courses please fill out the form available at <https://goo.gl/forms/evzndAi72b2JRFTE3> , until April 9. By sending this form correctly

filled you are automatically matriculated for the classes, which have to be attended in person (Room U155). No communication will be sent confirming the registration.

In case of any doubt, please contact:

- Course tutor Lais Siqueira ([laismaria.siqueira@gmail.com](mailto:laismaria.siqueira@gmail.com)) or;
- Professor Lucas Weihmann ([lucas.weihmann@ufsc.br](mailto:lucas.weihmann@ufsc.br)).

## Planned schedule

### Course 01: Risers and Pipelines

Course name:	Risers and Pipelines			
Course organiser:	UFRJ (Murilo Augusto Vaz) <a href="mailto:murilo@oceanica.ufrj.br">murilo@oceanica.ufrj.br</a>			
April to July, 2018				
The course will present fundamental aspects of design, fabrication, installation and operation of slender structures employed in exploration (drilling risers) and production (risers and pipelines) of oil and gas reservoirs in deepwaters. Emphasis will be placed on understanding the mechanical behavior of such systems.				
date	day	lecturer name	sub-title of lecture	lecture contents
9-Apr	Mon	Carlos A. D. Lemos	Importance of Riser and Pipeline Technology for O&G Production	Overview of main technologies employed and challenges.
11-Apr	Wed	Marcelo Igor	Pipelines	Introduction and Manufacturing Processes
16-Apr	Mon	Marcelo Igor	Pipelines	Installation Methods
18-Apr	Wed	To be defined	Pipelines	Buckling and Collapse Under Combined Bending and External Pressure
23-Apr	Mon	Holidays	Holidays	Holidays
25-Apr	Wed	To be defined	Pipelines	Collapse propagation
30-Apr	Mon	Holidays	Holidays	Holidays
2-May	Wed	Rafael Solano	Pipelines	Thermal Buckling
7-May	Mon	Rafael Solano	Pipelines	Design issues
9-May	Wed	Carlos A. D. Lemos	Flexible risers and umbilical cables	Introduction, Materials, Functions, Configurations, Fabrication and installation
14-May	Mon	Celso Pesce	Flexible risers and umbilical cables	Global analysis and environmental conditions
16-May	Wed	Alfredo Gay Neto	Flexible risers and umbilical cables	Collapse & Burst. Torsion-bending instability
21-May	Mon	Celso Pesce	Flexible risers and umbilical cables	Axisymmetric and bending analyses
23-May	Wed	José Renato Mendes de Sousa	Flexible risers and umbilical cables	Finite Element Analysis
28-May	Mon	Celso Pesce	Flexible risers and umbilical cables	Umbilical cable
30-May	Wed	Celso Morooka	SCR	Introduction for rigid riser systems and SCR dynamic behavior
4-Jun	Mon	Sergio Bordalo	SCR	Hydrodynamic forces due to internal petroleum flow
6-Jun	Wed	Celso Morooka	SCR	Wave and current forces; platform motion induced
11-Jun	Mon	Celso Pesce	SCR	Dynamic global structural responses and local analysis
13-Jun	Wed	Carlos A. D. Lemos	Flexible risers and umbilical cables	Fatigue assessment
18-Jun	Mon	Celso Pesce	SCR	Riser Mechanics and hydrodynamic loads
20-Jun	Wed	Carlos A. D. Lemos	Flexible risers and umbilical cables	Fatigue assessment
25-Jun	Mon	Sergio Bordalo	SCR	Dynamic response due to internal multiphase flow
27-Jun	Wed	Hideyuki Suzuki	Drilling Risers	Introduction of drilling riser system
2-Jul	Mon	Hideyuki Suzuki	Drilling Risers	Failure of drilling riser
4-Jul	Wed	Hideyuki Suzuki	Drilling Risers	Effective tension
9-Jul	Mon	Hideyuki Suzuki	Drilling Risers	Dynamic response
11-Jul	Wed	Hideyuki Suzuki	Drilling Risers	Vortex induced vibration
16-Jul	Mon	Holidays	Holidays	Holidays
18-Jul	Wed	Final Exam	Final Exam	

## Course 02 : Subsea Well Construction and Petroleum Production Systems

Course name:	Subsea Well Construction and Petroleum Production Systems			
Course organiser:	UNICAMP (Kazuo Miura) kazuo@gmail.com			
April to July, 2018				
full				
Description:	Development of offshore oilfield using subsea technologies.			
date	day	lecturer name	sub-title of lecture	lecture contents
5-Apr	Thu	Prof. José Ricardo (UNICAMP)	Offshore Oilfield Exploration & Production	Overview about oil, oilfield, oil exploration and oil field development.
10-Apr	Tue	Prof. Bordalo (UNICAMP)	Petroleum & Petroleum System	Discussion about what is petroleum and where petroleum are
12-Apr	Thu	Dr. Kazuo	Exploration	Overview about how to find oil
17-Apr	Tue	Dr. Kazuo	Exploratory well	Discussion about how to construct exploratory well and construction risk.
19-Apr	Thu	Prof. José Ricardo (UNICAMP)	OFFSHORE DRILLING RIGS	Discussion about most common drilling & completion rigs used in different contexts.
24-Apr	Tue	Dr. Kazuo	BOP & MUD LOGGING UNITS	Discussion about blowout preventer BOP and drilling parameters registering units
26-Apr	Thu	Dr. Kazuo	Oilfield development	Overview about how to develop offshore oilfield
1-May	Tue	Brazilian holiday		
3-May	Thu	Japanese holiday		
8-May	Tue	all professors	OFFSHORE OILFIELD DEVELOPMENT	Introduction of field development projects to be presented as course final evaluation
10-May	Thu	Dr. Kazuo	Development well construction	Discussion about how to construct development well and construction risk.
15-May	Tue	Dr. Kazuo	Exploratory Well vs. Development Well	Discussion about risk difference between exploratory and development wells.
17-May	Thu	Prof. Bordalo (UNICAMP)	PETROLEUM PRIMARY PROCESSING	Discussion about petroleum primary processing and how to use gas and how to treat produced water for its disposal
22-May	Tue	Prof. Bordalo (UNICAMP)	Floating Production Units (FPU)	Overview about where primary processing is actually done.
24-May	Thu	Prof. Marcelo Igor (UFRJ)	Subsea collecting & exporting system	Overview about subsea pipeline (flowline, riser) and equipment (manifold, PLEM & PLET) layout
29-May	Tue	Prof. Marcelo Igor (UFRJ)	Subsea processing system	Overview about subsea separation & boosting systems
31-May	Thu	Brazilian holiday		
5-Jun	Tue	all professors	OFFSHORE OILFIELD DEVELOPMENT	Intermediate project evaluation
7-Jun	Thu	all professors	OFFSHORE OILFIELD DEVELOPMENT	Intermediate project evaluation
12-Jun	Tue	Brazilian holiday		
14-Jun	Thu	all professors	OFFSHORE OILFIELD DEVELOPMENT	Intermediate project evaluation
19-Jun	Tue	Prof. Bordalo (UNICAMP)	Offshore oilfield exploitation	Overview about oil production and recovery types
21-Jun	Thu	Prof. José Ricardo (UNICAMP)	Offshore oilfield major production losses	Overview about what causes loss of oil production in offshore oilfield
26-Jun	Tue	Dr. Kazuo	Subsea well intervention	Overview about how to maintain/recover producer well
28-Jun	Thu	Dr. Kazuo	Offshore oilfield decommissioning	Overview about how to maintain well integrity after its abandonment.
3-Jul	Tue	Dr. Kazuo	Service units: slickline, wireline & coiled tubing	Overview about through tubing services
5-Jul	Thu	Dr. Kazuo	Service units: stimulation vessel, N2 unit & cement unit	Overview about fluid pumping services
10-Jul	Tue	all professors	OFFSHORE OILFIELD DEVELOPMENT	Final project evaluation
12-Jul	Thu	all professors	OFFSHORE OILFIELD DEVELOPMENT	Final project evaluation

## Course 03 : Introduction of Ocean Energies and Environments

Course name:	Introduction of Ocean Energies and Environments			
Course organiser:	Toru Sato			
April to July, 2018				
half				
Description:	The ocean has lots of energy resources, such as not only oil, gas, and even methane hydrate as fossil fuels but also renewable energies using wind, ocean/tidal current, tidal elevations, wave, and thermal difference between surface and bottom waters. On the other hand, if development is too much, it may cause environmental problems. This half course (1 class per week) will provide introductory explanations of ocean energies: both conventional and renewable, and their concerned environmental issues. Non-scientific students are welcome with no equations and a little physics.			
date	day	lecturer name	sub-title of lecture	lecture contents
6-Apr	Fri	Toru Sato	Inclusive Impact assessment Index: Triple I	
13-Apr	Fri	Segen Estefen	Ocean current: technology and policy	
20-Apr	Fri	Segen Estefen	Ocean current: economy and environment	
27-Apr	Fri	Daisuke Kitazawa	Offshore wind: technology and environment	
4-May	Fri	Holiday in J	no lecture	
11-May	Fri	Daisuke Kitazawa	Food energy: technology and environment	
18-May	Fri			May Festival in Utsunomiya
25-May	Fri	Kazuo Miura	Oil/gas: technology and environment	
1-Jun	Fri	Yoshihiro Konno	Methane hydrate: technology and environment	
8-Jun	Fri	Alexandre Nicolaos Simos	Wave energy: technology and policy	Honorary will be paid to Prof Kazuo Nishimoto
15-Jun	Fri	Motohiko Murai	Wave energy: economy and environment	
22-Jun	Fri	Toru Sato	CCS: technology, environment, and social aspect	
29-Jun	Fri	Shigeru Tabeta	OTEC: technology and environment	
6-Jul	Fri	Shigeru Tabeta	Biomass: technology and environment	
13-Jul	Fri	All the lecturers	Presentation	Choose 1 energy item and consider methods solving its potential environmental issues. We will make teams and have competition.