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DIPARTIMENTO
DI INGEGNERIA
CIVILE E AMBIENTALE
DIPARTIMENTO DI ECCELLENZA

CIVIL AND ENVIRONMENTAL ENGINEERING

DOCTORAL PROGRAM 2022-2023

Dr. Ayan Sadhu received his Master Degree at the Indian Institute of Technology (IIT) Kanpur, India and his Ph.D. at the University of Waterloo.
Dr. Sadhu's research is focused on addressing the practical challenges of structural health monitoring while harnessing the capability of modern sensing technology.
His current projects involve both theoretical as well as experimental research in areas including structural condition assessment, damage detection, pattern recognition, vibration control, Artificial Intelligence, and information modeling techniques of large-scale structures. This research resulted in numerous research articles, and the proposed algorithms have been successfully implemented in several full-scale structures including those located in North America and Europe.
In 2021, Dr. Sadhu received the prestigious Early Researcher Award from the Ministry of Ontario. His research is also supported by NSERC Discovery and Alliance grants, CFI-JELF, Mitacs, and various industry partners.
In 2022, Dr. Sadhu was the recipient of the Junior Faculty Award for Excellence in Research at Western Engineering.

VIBRATION-BASED STRUCTURAL HEALTH MONITORING

Instructor

Ayan Sadhu, Ph.D., P.Eng., M.ASCE, M.CSCE
Canada Research Chair and Associate Professor
Director of Smart Cities and Communities Lab
Department of Civil and Environmental Engineering
Western University

Location

Campus of Engineering of University of Perugia
Via G. Duranti, 93, Perugia

Course Description (30 hours, 5 CFU)

In this course, the student will be able to:
eral loading.
• Develop the ability to characterize random vibration and stationary stochastic processes.
• Understand different system identification methods and analyze time-invariant linear dynamical systems.
• Develop the ability to perform vibration testing, including free vibration, forced vibration and ambient vibration testing to extract relevant system information of structures.

Course Timetable

September 13th, 2023 - 9:00-12:00, Room 6 - Motivation for SHM, Dynamical systems and equilibrium
September 14th, 2023 - 9:00-12:00, Room 6 - Free vibration of damped and undamped SDOF system
September 15th, 2023 - 9:00-12:00, Room 6 - Forced vibration of damped and undamped SDOF system
September 18th, 2023 - 9:00-12:00, Auletta - Vibration response under general loading
September 19th, 2023 - 9:00-12:00, Auletta - Free and forced vibration of MDOF system
September 21th, 2023 - 9:00-12:00, Auletta - Autocorrelation and power spectral density functions
September 22th, 2023 - 9:00-12:00, Auletta - Analysis of random signal, Types of SID methods
September 25th, 2023 - 9:00-12:00, Auletta - Time-domain/Frequency-domain/Time-frequency methods
September 26th, 2023 - 9:00-12:00, Auletta - Vibration sensors and data acquisition system
September 27th, 2023 - 9:00-12:00, Aula Magna - Take-home final exam or project

For more info Mrs. Teresa Nocera, Ph.D. Program Secretariat (teresa.nocera@unipg.it
Prof. Dr. Filipo Ubertini, Ph.D. Program Coordinator (filippo.ubertini@unipg.it)

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