



Solar Energy Engineering, University of Freiburg

CERTIFICATE OF ADVANCED STUDIES (CAS):

CAS 6 - PHOTOVOLTAIC POWER PLANTS

STEP UP YOUR
PROFESSIONAL SKILLS WITH
AN ACCREDITED CERTIFICATE



Offered by

universität freiburg



CAS – ACCREDITED PROGRAMS FROM PRESTIGIOUS INSTITUTIONS

CAS 6, PART I: PROJECT DEVELOPMENT

What is a Certificate of Advanced Studies?

A Certificate of Advanced Studies (CAS) is an advanced training program which is compliant with the European Credit Transfer System (ECTS). These standards secure the high quality of CAS programs as well as their comparability and recognition across educational institutions.

Our CAS course offers are the result of a long-standing scientific cooperation between the University of Freiburg and the renowned Fraunhofer Institute for Solar Energy Systems ISE. Studying one of our CAS programs gives you access to expert knowledge from a world-leading research institute and awards you with a certificate of one of Germany's top universities.

Key summary:

- **Study semester:** Summer semester (start in Mid-April)
- **Duration:** 6 months
- **Cost:** 3750 euro
- **Study format:**
 - Regular online meetings and tutor-led live sessions
 - Recorded video lectures
 - Engagement in discussions in online forums
 - Reading and exercise material specified for each course
 - Scientific projects that are conducted with close supervision
 - Student presentations
 - Modeling and simulation task

Lecturers:

- **Prof. Dr. -Ing. Mohammadreza Aghaei**, Adjunct Professor at Amirkabir University of Technology, Iran; Senior scientist at the Smart Buildings and Infrastructure group at the Norwegian University of Science and Technology (NTNU), Norway
- **Prof. Killian Lobato**, Assistant Professor in Energy Engineering at University of Lisbon, Portugal

Course content:

- Solar Resource Assessment and Analysis
- Site Analysis and Environmental Impact Assessment
- Project Feasibility Study
- Financial Modeling and Cash Flow Analysis
- Grid Connection and Interconnection Requirements
- Environmental and Social Responsibility in Project Development



CAS 6, PART II: ENGINEERING, PROCUREMENT & COMMISSIONING (EPC)

CAS 6, PART III: OPERATION AND MAINTANANCE

The course "Engineering Procurement and Commissioning" is designed to equip participants with the fundamental knowledge needed to effectively design and execute large-scale solar energy projects. Focusing on the key principles and practices involved in the engineering, procurement, and construction phases of solar energy systems, the course covers topics such as project optimization, power plant simulation, equipment selection, and quality assurance. Through a combination of theoretical instruction and practical case studies, participants will develop an understanding of the entire project lifecycle and gain the expertise required to successfully lead and oversee solar energy projects from inception to completion.

Lecturers:

- **Prof. Dr. Ricardo Rüther**, Professor in the field of solar photovoltaics, solar irradiation resource assessment, electrochemical storage and electromobility at the Universidade Federal de Santa Catarina, Brazil.
- **Dr. Marília Braga**, Researcher at Fotovoltaica UFSC, Brazil

Course content:

- Fundamentals of Engineering, Procurement and Construction in PV projects
- Electrical design and equipment selection for PV power plants
- Optimization and simulation of PV power plants
- Quality assurance for PV projects: design and execution
- Quality assurance for PV projects: commissioning tests
- Quality assurance for PV projects: performance metrics
- Real EPC: evaluation of case studies

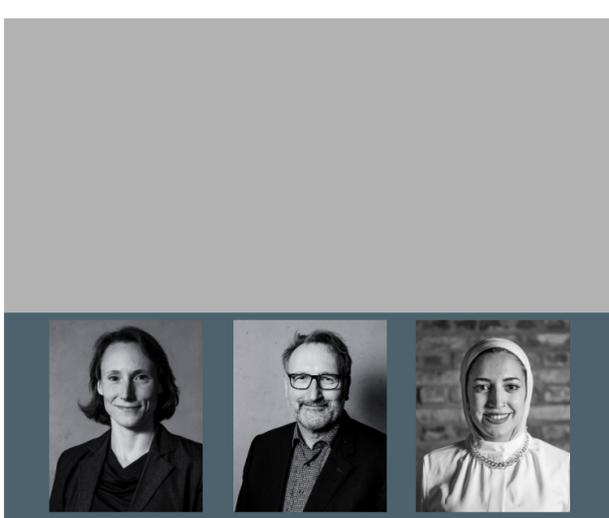
The course "Operation and Maintenance" provides participants with a comprehensive understanding of the challenges and activities related to this phase of a PV system's life cycle. Through this course, participants will gain the knowledge and skills needed to assess the impact of issues on the performance of a PV system and formulate maintenance strategy plans. They will learn to analyze monitoring data and extract useful information for the operation of a PV system. By the end of the course, participants will be equipped to make informed decisions during the O&M phase, considering factors such as typical issues and available resources for inspection and online monitoring. The course includes theoretical lectures, practical exercises, and case studies to enhance learning and enable participants to contribute effectively to the implementation of sustainable and efficient O&M practices.

Lecturers:

- **Dr. Eduardo Sarquis**, Head of data analysis and modelling at Enmovia GmbH, Portugal
- **Dr. Björn Müller**, head of the team "PV Power Plants", Fraunhofer ISE, Germany

Course content:

- Introduction to PV systems O&M
- Analysis of Failure
- Maintenance paradigms: principles (Preventive, Corrective, Predictive) & application
- Online monitoring of Power Plant: data collection & main analysis (soiling, shading, fault detection)
- Optimisation and Performance Improvement



MEET THE MANAGEMENT TEAM OF SOLAR ENERGY ENGINEERING

Prof. Dr. Anke Weidlich

SEE Program Director

Professor for Control and Integration of Grids at Department of Sustainable Systems Engineering, University of Freiburg

Prof. Dr. Stefan Glunz

SEE Program Co-Director

Professor of PV Energy Conversion at Department of Sustainable Systems Engineering, University of Freiburg; Head of Division Photovoltaics, Fraunhofer ISE

M.Sc. Khadija Khaled

SEE Program Coordinator

Graduate of M.Sc. Solar Energy Engineering (2018 intake), University of Freiburg

For more information:



www.study-solar.com

For more information and application, contact us at:

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