



## NAAB International Certification

### Appendix 1: Template for Course Descriptions [limit 1 page per course]

#### Number & Title of Course (total credits awarded):

TECH401 - Environmental Comfort and Energy Efficiency (Arch) - Semester 7 - ECTS 6 - Cycle/Profile: 2nd. Cycle/Integr. Arch. - Scientific Area: TAUD-Technologies of Architecture, Urbanism and Design

#### Course Description (limit 25 words)

Bioclimatic and passive solar architecture emphasizes sustainability and energy efficiency. The course covers comfort, energy requirements, and renewable solutions in line with European 2030/50 goals.

#### Course Goals & Objectives (list):

Introduction to bioclimatic and passive solar architecture.

Focus on sustainable building performance, reducing energy consumption in all phases.

Calculation of environmental comfort parameters, including thermal, lighting, acoustic, and indoor air quality.

Assessment of energy needs for heating, cooling, ventilation, and domestic hot water.

Exploration of passive elements, active systems, and renewable energy capture.

Strategies for designing Nearly Zero Energy Buildings (NZEBs) aligned with the National Energy and Climate Plan and European directives up to 2030/50.

#### Student Performance Criterion addressed (list number and title):

Primary - B.6 Environmental Systems; B.7 Building Envelope Systems and Assemblies; Secondary - B.3 Codes and Regulations; B.9 Building Service Systems;

#### Topical Outline (include percentage of time in course spent in each subject area):

Lecturing 36% (contact: 28 h + independent work: 28 h) for Environmental Issues (4 h + 4 h), Bioclimatic Architecture (4 h + 4 h), Passive Design (6 h + 6 h), Active Design (4 h + 4 h), Renewable Energy Systems (4 h + 4 h), Natural and Artificial Lighting (4 h + 4 h), and Acoustics (2 h + 2 h).

Studio Work 44% (contact: 28 h + independent work: 38 h) for Environmental Analysis (2 h + 4 h), Bioclimatic Design (10 h + 14 h), Energy Efficiency and Environmental Impact (12 h + 14 h), and Final Report (4 h + 6 h)

Critics 5% (independent work: 7.5)

Investigative Work 5% (independent work: 7.5 h)

Site Visits 5% (independent work: 7.5 h)

Readings 5% (independent work: 7.5 h)

#### Prerequisites:

TECH401 - Environmental Comfort and Energy Efficiency (Arch); TECH401 - Environmental Comfort and Energy Efficiency (Arch); TECH401 - Environmental Comfort and Energy Efficiency (Arch);

#### Textbooks/Learning Resources:

#### Offered (semester and year):

#### Faculty assigned (list all faculty assigned during the two academic years prior to the visit):

Carlos Filipe Chambel Duarte; Luís Augusto da Costa Álvares Rosmaninho; Luísa Maria da Conceição dos Reis Paulo; Nuno Dinis Costa Areias Cortiços;