

**PETITION TO SUBSTITUTE MASTER OF ARCHITECTURE BASIC STUDIES COURSE REQUIREMENT**

Name _____	USC ID# _____	Date _____
EQUIVALENT COURSE TITLE(S) _____		
COURSE # _____ UNITS _____ SEMESTER/YEAR COURSE WAS COMPLETED _____		
GRADE _____ INSTITUTION _____		

**Number & Title of Course:** ARCH 575A    **SYSTEMS: THE THERMAL ENVIRONMENT**                      **3 UNITS**

**Course Description** Application of the scientific principles governing the thermal environment and human physiology to contemporary issues of environmentally responsive building energy concepts and systems. *Recommended preparation:* ARCH 505abL.

**Course Goals & Objectives:**

- This course applies the fundamental scientific principles governing the thermal environment and human physiology to contemporary issues of environmentally responsive building design and resource efficiency.
- Technologies and strategies to control the indoor environment as well as the basic analyses needed to inform design decision-making and examine project performance.
- Laws of thermodynamics, heat transfer and solar geometry in the context of building design and operation, and occupant comfort. Building as an environmental filter, where environmentally responsive design strategies are used to minimize the size and operation of mechanical systems and demand for energy from renewable sources.
- Following these steps, energy efficient mechanical systems, controls and renewable energy technologies will be covered as a supplement to these strategies.

Required Curricular Topics addressed	<u>Met</u>	<u>Not Met</u>
Principles of Solar Analysis, and Design		
Heat flow and Thermal Mass,		
Building Envelope		
Building Energy Modeling and Digital Tool (see software below)		
Passive and Active Systems		
Case Studies		

Required Student Performance Criterion/a addressed:	<u>Met</u>	<u>Not Met</u>
B.3 Sustainability		
B.8 Environmental Systems		
C.2 Human Behavior		

**Required Text:**

Norbert Lechner. Heating, Cooling, Lighting: Sustainable Design Methods for Architects. 3<sup>rd</sup> Edition, 2009.

**Required Software:**

THERM, Climate Consultant 5.1, Ladybug plugin to Grasshopper, HEED Home Energy Efficient Design, COMFEN, DIVA for Rhino, PV Watts (web-based)

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Recommendation	<input type="checkbox"/> Substitution Approved <input type="checkbox"/> Substitution Denied
Associate Director, Master of Architecture _____	Date _____
Selwyn Ting	
Comment _____	