

PH.D. PROGRAM IN TECHNOLOGY AND MANAGEMENT OF CULTURAL HERITAGE
YEAR 2005 – XX CYCLE, YEAR 2006 – XXI CYCLE

At present, a range of professionals - engineers and architects; art historians; experts in new technologies for Cultural Heritage, management and legal affairs; experts of tourism dynamics - are operating in the field of conservation and exploitation of Cultural Heritage, often failing to cooperate and communicate due to a lack of a broader perspective on the Cultural Heritage domain.

The characterizing element of the PhD program is the multidisciplinary approach able to train new professionals who, starting from their own disciplines and competencies, will be able to manage the different actions of safeguard, conservation and management of cultural properties they will be involved in.

The PhD program is intended to form experts who can act as project leaders for conservation and valorisation activities. The PhD program is oriented to prepare new professionals for public administrations and private companies or for universities and research institutes, able to develop, manage and lead research and/or exploitation projects for Cultural Heritage.

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Academic Year 2005/2006

I YEAR

I TERM FEBRUARY - APRIL 2006

Course Title: Chemical characterization of materials	Total hours: 21
Abstract: Overview of materials science, the crystalline materials; corrosion problems, with particular regard to metals; micro-destructive and non-destructive analytical techniques: principles and methods for a significant diagnostic.	
Lecturers: Pietro Pedferri, Politecnico di Milano; Lucia Toniolo, CNR Milano; Maria Perla Colombini, Università di Pisa	
Course Title: Physical characterization of materials	Total hours: 21
Abstract: Physical properties of materials; physical technologies; case studies	
Lecturers: Rinaldo Cubeddu, Politecnico di Milano; Gianluca Valentini, Politecnico di Milano	
Course title: Conservation vs. Restoration	Total hours: 21
Abstract: Architectural conservation between XVIII and XX c.: Fathers, theories and projects.	
Lecturer: Marco Dezzi Bardeschi, Politecnico di Milano	
Course title: Problems of preservation and conservation of architectural heritage and cultural landscape	Total hours: 21
Abstract: Evolution of monument and heritage concept; cultural heritage as social and territorial system; the effects on preservation laws and treatments; case studies.	
Lecturers: Maurizio Boriani, Politecnico di Milano; Alberta Cazzani, Politecnico di Milano; Maria Cristina Giamburino, Politecnico di Milano	
Course title: Project organization and management	Total hours: 21
Abstract: Project planning, control and management; application to "Cultural Heritage projects". Preparing a Business plan for a new project: financial and organizational issues.	
Lecturers: Giovanni Azzone, Politecnico di Milano; Michela Arnaboldi, Politecnico di Milano	
Course title: Communication for cultural heritage	Total hours: 21
Abstract: Information architecture for cultural heritage; communication-valorisation connection; cultural heritage communication typologies and technologies; multimedia communication on line.	
Lecturers: Paolo Paolini, Politecnico di Milano; Nicoletta Di Blas, Politecnico di Milano	

II TERM MAY - JULY 2006

Course Title: Structural characterization - Investigation and diagnostic	Total hours: 21
Abstract: Mechanical properties of materials; the architectural structures; investigation methods; conservation methodologies; case studies.	
Lecturers: Luigia Binda, Politecnico di Milano; Antonella Saisi, Politecnico di Milano	
Course title: Conservation of materials	Total hours: 21
Abstract: Problems of durability: degradation and alteration of artefacts; main causes and mechanisms of degradation of stone materials; the conservation work for architectural heritage; case studies.	
Lecturers: Pietro Pedferri, Politecnico di Milano; Lucia Toniolo, CNR Milano; Maria Perla Colombini, Università di Pisa; Sara Goidanich, Politecnico di Milano	
Course title: Art and art culture history	Total hours: 21
Abstract: Historical and artistic search; analysis of artistic techniques from Middle Ages to contemporary age with case studies; analysis of art criticism and artistic literature focused on conservation and restoration problems.	
Lecturer: Alessandro Tosi, Università di Pisa	
Course title: Public management	Total hours: 21
Abstract: Organization of public central and local administration. Management systems in public administration. The new organization of Cultural Heritage administration in Italy. The management in the Ministry of cultural heritage: strategic and management control, evaluation of human resources.	

Lecturers: Giovanni Azzone, Politecnico di Milano; Bruno Dente, Politecnico di Milano; Girolamo Sciuolo, Università di Bologna	
Course title: Information management for cultural heritage	Total hours: 21
Abstract: Inventory of cultural heritage: data base; digitizing techniques of works of art.	
Lecturers: Maurizio Forte, CNR ITABC Roma, Sonia Maffei, Università di Bergamo, Marcello Carrozzino, Scuola Superiore S. Anna di Pisa	

III TERM: September – December 2006

Course title: History of architecture and architectural conservation in Lucca area	Total hours: 18
Abstract: Historic sources and projects in the Lucca area between XVIII and XX c.	
Lecturer: Maria Adriana Giusti, Politecnico di Torino	
Course Title: Characterization of environment	Total hours: 21
Abstract: The decay of materials caused by the light and environmental conditions; methodologies for in situ diagnosis (environmental monitoring); evaluation of environmental risk for conservation; systems and devices for light and thermo-hygrometric parameters control.	
Lecturers: Marco Filippi, Politecnico di Torino; Anna Pellegrino, Politecnico di Torino; Marco Perino, Politecnico di Torino	
Course title: Museology and museography	Total hours: 24
Abstract: Museology; museography, art collection history; problems of museum conservation and management; case studies.	
Lecturers: Ettore Spalletti, Università di Pisa, Antonella Gioli, Università di Pisa, Maria Teresa Filieri, Soprintendenza per i beni architettonici e il paesaggio e per il patrimonio storico artistico ed etnoantropologico per le province di Lucca e Massa Carrara, Antonio Natali, Museo degli Uffizi – Direttore	
Course title: Marketing and design of Cultural Heritage experience	Total hours: 27
Abstract: Identification of cultural property as experience having cognitive and enjoyment characteristics, being connected to costs and proceeds; experience design (lay outing; real, augmented and virtual spaces; interaction & human-centred design; psychology of enjoyment); experience structuring (organization, processing, suppliers); the memory factory (web and bookshop); marketing of cultural activities and territory.	
Lecturers: Giuliano Noci, Politecnico di Milano; Paolo Paolini, Politecnico di Milano	
Course title: New interaction paradigms for cultural heritage	Total hours: 21
Abstract: Virtual environment, enhanced reality, enhanced virtuality; interactive computer graphic and visualization technologies.	
Lecturers: Massimo Bergamasco, Scuola Superiore S. Anna di Pisa; Francesco Antinucci, CNR	

GIUGNO 2007

Course title: Programmazione Grafica e Modellazione di Ambienti Virtuali.	Total hours: 18
Abstract: L1 Programmazione: L'ambiente di sviluppo XVR Programmazione: Linguaggi di programmazione e sintassi Programmazione: Tipi di dato 1: interi, float, boolean, stringhe Programmazione: XVR: funzioni di Output (output, consoletext) Programmazione: Variabili, Costanti, Assegnamento Programmazione: Operatori matematici Programmazione: Statement condizionali (if, case, ...), iteratori (for, while, ...) Programmazione: Funzioni L2 Programmazione: Tipi di dato 2: Array e vettori Programmazione: Tipi di dato 3: Classi e oggetti Programmazione: XVR: i loop (funzioni predefinite) L3 Grafica 3D: Fondamenti teorici (pipeline grafica, matrici di trasformazione, illuminazione, texturing) Grafica 3D: 3DStudioMax: introduzione all'ambiente di modellazione (GUI etc.) Grafica 3D: Mesh poligonali e trasformazioni geometriche L4 Grafica 3D: 3DStudioMax: Creazione/trasformazione ed esportazione di semplici mesh Grafica 3D: 3DStudioMax: Materiali e texture Programmazione: XVR: Caricamento e visualizzazione di mesh poligonali, semplici trasformazioni geometriche via codice L5 Grafica 3D: 3DStudioMax: Importazione e modifica di mesh Grafica 3D: 3DStudioMax: Illuminazione (normale e avanzata) Grafica 3D: 3DStudioMax: Esportazione di dati di illuminazione Programmazione: XVR: Modifiche ad oggetti via codice (geometria, materiali e texture) L6 Grafica 3D: 3DStudioMax: Semplici animazioni (oggetti e camere) Programmazione: XVR: Importazione di dati di animazione Lecturers: Marcello Carrozzino, IMT Lucca Institute for Advanced Studies	

INVITED LECTURERS AND SEMINARS

- *Il Recupero dell'Antico e del Moderno: Confronti*

Joint Seminar MASP 2005 and Ph.D. Program in Technology and Management of Cultural Heritage

- *Complessità, Strategie, Strumenti per la Valorizzazione delle Risorse Culturali. Il Parco-Sistema Lucchese: Acquedotto, Mura, Parco Fluviale*

Prof.ssa Maria Adriana Giusti, Politecnico di Torino

- *Restauro in Cattedrale: il Recupero dell'Apparato Decorativo Interno*

Prof.ssa Maria Teresa Filieri, Ministero per i Beni e le Attività Culturali, Lucca

- *Tecnologie Integrate di Robotica ed Ambienti Virtuali in Archeologia*

Prof. Massimo Bergamasco, Scuola Superiore S. Anna, Pisa

- *Virtual Environments. A Viewpoint of Architecture and Art*

Prof. Yu-Tung Liu, National Chiao Tung University, Taiwan

- *La Prevenzione e la Salvaguardia del Patrimonio Storico-Artistico in Zona Sismica*

Vari relatori

- *Tutela e Gestione del Paesaggio: l'Esperienza Statunitense*

Prof. Maurizio Boriani, Politecnico di Milano

Prof.ssa Alberta Cazzani, Politecnico di Milano

Prof. Charlie Pepper, Olmsted Center for Landscape Preservation, MA