

PERSONAL INFORMATION

LUCA ESPOSITO

POSITION

INCARICO DI PRESTAZIONE OCCASIONALE. RIFERIMENTO DEL CONCORSO (MECHAVERSE/CAROTENUTO-P.O. 28/20)

PROFESSIONAL EXPERIENCE

FROM 2022 TO 2032

NATIONAL SCIENTIFIC QUALIFICATION FOR THE ROLE OF ASSOCIATE PROFESSOR

Competitive Sector 08/B2 – Structural Mechanics

Subject Area ICAR/08 – Structural Mechanics

29.04.2022

MEMBER OF THE SELECTION COMMITTEE FOR THE SCHOLARSHIP SELECTION BASED ON QUALIFICATIONS AND INTERVIEW

Development of limit design algorithms with reference to approaches for domes and structures made of non-tensile materials

Engineering Department

University of Campania Luigi Vanvitelli

FROM 2019 TO 2020

REVIEWER PANEL MEMBER FOR THE ICELANDIC RESEARCH FUND

Reviewer of the Research Project: Performance of Structures under Fire Following Earthquake Scenarios (IRF 207196-051)

Reviewer of the Research Project: Bionic Prosthesis (IRF 228426-051)

Reviewer of the Research Project: Multi-hazard fragility analysis and vibration control of utility-scale land-based wind turbines (IRF 207100-051)

FROM 09.10.2020 TO DATE

COOPERATION AGREEMENT SCIENTIFIC DIRECTOR

Research activities in the fields of mutual interest

Engineering Department, University of Campania Luigi Vanvitelli

Institute of Biomedical and Neural Engineering, University of Iceland

FROM 2019 TO 2024

RESEARCHER WITH FIXED-TERM CONTRACT TYPE A

Competitive Sector 08/B2 – Structural Mechanics

Subject Area ICAR/08 – Structural Mechanics

Engineering Department

University of Campania Luigi Vanvitelli

FROM 01.12.2018 TO 01.12.2019

RESEARCH FELLOW

MULTI-SCALE MECHANICAL MODELS FOR THE DESIGN AND OPTIMIZATION OF MICRO-STRUCTURED SMART MATERIALS AND METAMATERIALS

Subject Area: ICAR/08

Research Program PRIN 2015: Computational homogenization of porous media characterized by non-linear behavior

University of Naples Federico II

Department of Structures for Engineering and Architecture (DiSt)

FROM 01.02.2017 TO 31.01.2018

SCHOLARSHIP FOR RESEARCH ACTIVITIES

MODELING AND FEM SIMULATION OF TOUCH SENSORS

Subject Area: ICAR/08

University of Campania Luigi Vanvitelli

Industrial Engineering Department (DII)

FROM 01.01.2016 TO
31.12.2016

RESEARCH FELLOW

MODELS AND METHODS OF ANALYSIS AND STRUCTURAL DESIGN, TECHNOLOGICAL INNOVATION AND ADVANCED MATERIALS FOR SAFETY AND SUSTAINABILITY OF URBAN BUILDINGS

Subject Area: ICAR/08

University of Naples Federico II

Department of Structures for Engineering and Architecture (DiSt)

FROM 01.01.2014 TO
31.12.2015

RESEARCH FELLOW

MULTIPHYSICS TOPOLOGY OPTIMIZATION PROCEDURES FOR HIGH MECHANICAL PERFORMANCE COMPOSITES

Subject Area: ICAR/08

University of Naples Federico II

Center Excellence in Structural Composites for Innovative Constructions (SCIC)

FROM 01.01.2013 TO
NOW

FIELD SPECIALIST

Subject Area: ICAR/08

University of Naples Federico II

Department of Structures for Engineering and Architecture (DiSt)

06.2014

TESTING

Local interventions in the apartment located at Via Mario Fiore 34, Naples

Client: Nadia Uccello

03.2014

TESTING

Roofing of a wooden shed Via Aniello Falcone 371, Naples

Client: Marina Marino

FROM 01.01.2014 TO
31.12.2014

CONTRACT FOR CONSULTING, ASSISTANCE, AND SPECIALIST SUPPORT

1. Assisting in the qualification testing of new innovative high-temperature conductors; interpreting results and providing decision support.
2. Design and engineering of new low-cost concrete and steel foundations for next-generation pipe supports
3. Insights into the earthquake behavior of pipe supports.

Subject Area: ICAR/08

Client: Terna Rete Italia S.p.A.

10.05.2013

PH.D.

STRUCTURAL ENGINEERING – STRUCTURAL MECHANICS

TOPOLOGY OPTIMIZATION STRATEGIES IN MULTI-PHYSICS PROBLEMS

Evaluation expressed by the Examining Committee: EXCELLENT

Subject Area: ICAR/08

University of Naples Federico II

Department of Structures for Engineering and Architecture (DiSt)

07.2013

TESTING

Realization of a loft in a commercial space located at Via E. Alvino 58, Naples

Client: Salvatore Motta

01.2012

TESTING

Extraordinary maintenance and conservative restoration work of a building (4th, 5th, and 6th floor) located in via Domenico Capitelio3, Naples

Client: Valeria Pezza

12.2011

TESTING

Retrofitting of a farmhouse located at Via Priora 24, Sorrento (NA)

Client: Maria Giovanna Pappalardo

12.2011

TESTING

Extraordinary maintenance works of the farmhouse located at Via Priora 24, Sorrento (NA)

Committente: Maria Giovanna Pappalardo

22.2011

TESTING

Restoration works of an attic situated in Via Ilioneo 77, Naples

Client: Gloria Simoncini

FROM 01.03.2010 TO
28.02.2013

PH.D. STUDENT XXV CYCLE

STRUCTURAL ENGINEERING – STRUCTURAL MECHANICS

TOPOLOGY OPTIMIZATION STRATEGIES IN MULTI-PHYSICS PROBLEMS

Supervisor: prof. M. Fraldi

Subject Area: ICAR/08

University of Naples Federico II

Department of Structures for Engineering and Architecture (DiSt)

FROM 01.01.2010 TO
30.04.2010

PROFESSIONAL CONSULTING CONTRACT

ANALYSIS AND NUMERICAL MODELING OF MECHANICAL, PHYSICAL, AND STRUCTURAL PROBLEMS THROUGH OPTIMIZATION PROCEDURES

Research Project PRIN 2007

Subject Area: ICAR/08

University of Naples Federico II

Department of Structures for Engineering and Architecture (DiSt)

10.02.2010

1° WINNER WITH SCHOLARSHIP OF THE COMPETITION FOR THE PH.D. XXV CYCLE

STRUCTURAL ENGINEERING – STRUCTURAL MECHANICS

Subject Area: ICAR/08

University of Naples Federico II

Department of Structures for Engineering and Architecture (DiSt)

FROM 01.10.2009 TO
31.03.2010

FE NON-LINEAR ANALYSIS

DEVELOPMENT OF AN ANALYTICAL RELATIONSHIP FOR THE DESCRIPTION OF THE INTERACTION OF PLASTICITY AND INSTABILITY AT THE ONSET OF HYDROSTATIC COLLAPSE FOR PIPELINES

Agreement for Scientific Consulting

Subject Area: ICAR/08

27.01.2010
CorusTubes Energy
University of Naples Federico II
Department of Structures for Engineering and Architecture (DiSt)
WINNER OF THE COMPETITION FOR THE PH.D. XXV CYCLE
AEROSPACE SCIENCE AND TECHNOLOGY – BIOMEDICAL ADDRESS
Second University of Naples (SUN)
Department of Aerospace Engineering

FROM 01.04.2009 TO
31.05.2009
NUMERICAL THERMO-MECHANICAL FEM ANALYSIS
STUDY AND EVALUATION FOR MECHANICAL FAILURE OF THE HUGE WINE
GLASSWORK AND ELABORATION OF GUIDELINES FOR THE DESIGN AND
CONSTRUCTION OF LARGE CASTING STRUCTURE IN PMMA
Agreement for Scientific Consulting
Subject Area: ICAR/08
Clax Italia S.p. A.
University of Naples Federico II
Department of Materials and Manufacturing Engineering (DIC-MaPI)

FROM 01.06.2009 TO
31.12.2009
SCHOLARSHIP FOR GRADUATES
GROWTH AND REMODELING MECHANISMS OF BIOLOGICAL TISSUES
Research Project: Novel Approach to Tissue Regeneration
Subject Area: ICAR/08
Italian Institute of Technology (IIT)

FROM 01.01.2008 TO
30.06.2008
NUMERICAL NON-LINEAR FEM ANALYSIS
MECHANICAL MODELING FOR FILM DELAMINATION IN MULTI-LAYER FOOD-
PACKAGING (NOVELQ)
Agreement for Scientific Consulting
Subject Area: ICAR/08
CNR – National Research Center
Institute for Biomedical and Composite Materials
University of Naples Federico II
Department of Materials and Manufacturing Engineering (DIC-MaPI)

FROM 01.08.2008 TO
31.12.2009
SCIENTIFIC-TECHNICAL PERFORMANCE AGREEMENT
NUMERICAL FINITE ELEMENT SIMULATION OF STRAIN TRANSFER IN FIBER OPTIC
SENSORS UNDER SERVICE CONDITIONS ON LARGE STRUCTURES
Research Project: Diagnostics and Monitoring of Civil Structures and Transport and
Service Networks by means of Distributed Fiber Optic Sensors Integrated with
Telecommunications Networks (MODIS)
Tecno in S.p.A. - Naples
University of Naples Federico II
Department of Structures for Engineering and Architecture (DiSt)

FROM 01.12.2005 TO
31.12.2007
CSF DEALER
Zone: Campania
AlmarBioimpianti s.r.l. - Naples

FROM 01.12.2005 TO
31.03.2007

SALES MANAGER

Zone: Campania
Synthes s.r.l. - Opera (MI)

FROM 01.01.2005 TO
01.06.2005

TERRITORY MANAGER

Zone: Campania
Smith & Nephew s.r.l. - Agrate Brianza (MI)

FROM 01.01.2002 TO
31.01.2003

PRODUCT MANAGER

Zone: Campania, Puglia e Basilicata
Kyphon Italia s.r.l. - Milan

FROM 01.01.2001 TO
31.03.2001

**CONTRACT FOR THE ENTRUSTING OF SCIENTIFIC SERVICES ACCORDING TO
ARTICLE 2222 ET SEQ. OF THE ITALIAN CIVIL CODE**

Research Project: Design and Optimization of Hip Prostheses
Subject Area: ICAR/08
University of Naples Federico II
Orthopedic Clinic: Prof. E.M. Corrado
Structural Mechanics Department: prof L. Nunziante

FROM 01.01.1994 TO
31.12.2001

PRODUCT MANAGER

Zone: South of Italy
Eurosurgealinc - Paris

FROM 01.01.1993 TO
31.12.2004

DATABASE DESIGNER AND DEVELOPER – SALES SUPPORT AND INSTALLER

Zone: Campania
Almar S.p.A. Informatic Division - Naples

FROM 01.01.1993 TO
31.12.2004

PRODUCT SPECIALIST

Zone: South of Italy
Almar S.p.A. Chirurgical Division - Naples

TEACHING ACTIVITIES - COURSES

A.A. 2023-2024 TO DATE

PROFESSOR

SIMULAZIONE NUMERICA DELLE STRUTTURE
Subject Area: ICAR/08
University of Campania Luigi Vanvitelli
Master's Degree in Civil Engineering

A.A. 2019-20 TO 2022-23

PROFESSOR

LABORATORIO NUMERICO DELLE STRUTTURE-ELEMENTI FINITI
Subject Area: ICAR/08
University of Campania Luigi Vanvitelli
Master's Degree in Civil Engineering

A.A. 2019-20 TO 2022-23

PROFESSOR

LABORATORIO NUMERICO DELLE STRUTTURE

A.Y. 2018-19
Subject Area: ICAR/08
University of Campania Luigi Vanvitelli
Master's Degree in Civil Engineering
ADJUNCT PROFESSOR
SIMULATION OF THE STRUCTURAL BEHAVIOR OF MATERIALS

FROM 07.10.2018 TO 14.10.2018
Subject Area: ICAR/08
University of Naples Federico II
Master's Degree in Materials Engineering
INVITED PROFESSOR
BIOMECHANICS AND BIOMATERIALS
Reykjavik University
Institute of Biomedical and Neural Engineering

FROM 07.10.2018 TO 14.10.2018
INVITED PROFESSOR
CLINICAL ENGINEERING
Reykjavik University
Institute of Biomedical and Neural Engineering

A.Y. 2018-19
ADJUNCT PROFESSOR
SIMULATION OF THE STRUCTURAL BEHAVIOR OF MATERIALS
Subject Area: ICAR/08
University of Naples Federico II
Master's Degree in Materials Engineering

A.Y. 2017-18
ADJUNCT PROFESSOR
MICROMECHANICS OF HETEROGENEOUS MATERIALS
Subject Area: ICAR/08
University of Naples Federico II
Master's Degree in Structural and Geotechnical Engineering

FROM 11.01.2014 TO 16.01.2014
ADJUNCT PROFESSOR
NUMERICAL FINITE ELEMENT TECHNIQUES FOR THE DESIGN AND MECHANICAL BEHAVIOR OF COMPOSITE MATERIALS
Subject Area: ICAR/08
University of Naples Federico II
Center of Excellence in Structural Composites for Innovative Constructions (SCIC)

A.Y. 2013-14
ADJUNCT PROFESSOR
SIMULATION OF FLUID DYNAMICS AND STRUCTURAL BEHAVIOR OF MATERIALS
Subject Area: ICAR/08
University of Naples Federico II
Master's Degree in Materials Engineering

A.Y. 2012-13 TO 2015-16
LECTURER
BIOMECHANICS II
Subject Area: ICAR/08
University of Naples Federico II

Post-Graduate School in Orthopaedics and Traumatology
 A.Y. 2011-12 TO 2015-16 **LECTURER**
 BIOMECHANICS I
 Subject Area: ICAR/08
 University of Naples Federico II
 Post-Graduate School in Orthopaedics and Traumatology
 1998 **LECTURER**
 COMPUTER OPERATOR
 Regional Professional Training Center E. Torricelli
 Campania Region

TEACHING ACTIVITIES - SEMINARS

A.Y. 2015-16 TO 2017-18 **STRUCTURES NUMERICAL LABORATORY (LANS)**
 PROF. V. MINUTOLO
 Subject Area: ICAR/08
 University of Campania Luigi Vanvitelli
 Master's Degree in Civil Engineering

A.Y. 2015-16 TO 2017-18 **FLUID DYNAMICS AND STRUCTURAL BEHAVIOR SIMULATION**
 PROF. G. D'AVINO
 Subject Area: ICAR/08
 University of Naples Federico II
 Master's Degree in Materials Engineering

A.Y. 2011-12 TO 2017-18 **MECHANICS OF BIOLOGICAL TISSUES**
 PROF. M. FRALDI
 Subject Area: ICAR/08
 University of Naples Federico II
 Master's Degree in Biomedical Engineering

A.Y. 2011-12 TO 2017-18 **FUNDAMENTALS OF BIOMECHANICS**
 PROF. M. FRALDI
 Subject Area: ICAR/08
 University of Naples Federico II
 Master's Degree in Biomedical Engineering

A.Y. 2016-17 TO 2017-18 **BIOMECHANICS**
 PROF. M. FRALDI
 Subject Area: ICAR/08
 University of Naples Federico II
 Master's Degree in Industrial Bioengineering

A.Y. 2014-15 **SIMULATION OF THE FLUID DYNAMICS AND STRUCTURAL BEHAVIOR**
 PROF. G. MENSITIERI
 Subject Area: ICAR/08
 University of Naples Federico II

A.Y. 2011-12 TO 2012-13 **SIMULATION OF THE FLUID DYNAMICS AND STRUCTURAL BEHAVIOR**

- PROF. D. LAROBINA
Subject Area: ICAR/08
University of Naples Federico II
Master's Degree in Materials Engineering
A.Y. 2009-10 TO 2012-13 **STRUCTURAL MECHANICS**
- PROF. L. NUNZIANTE
Subject Area: ICAR/08
University of Naples Federico II
Bachelor's Degree in Civil Engineering
A.Y. 2010-11 TO 2012-13 **STRUCTURAL MECHANICS**
- PROF. L. NUNZIANTE
Subject Area: ICAR/08
Pozzuoli Aeronautical Academy
Bachelor's Degree in Civil Engineering
FROM 03.03.2009 TO 03.03.2009 **COMPUTATIONAL BIOMECHANICS: EXAMPLES & APPLICATIONS**
- PROF. E.M. CORRADO
Subject Area: ICAR/08
University of Naples Federico II
Post-Graduate School in Orthopaedics and Traumatology
FROM 17.09.2009 TO 17.09.2009 **COMPUTATIONAL BIOMECHANICS**
- PROF. E.M. CORRADO
Subject Area: ICAR/08
University of Naples Federico II
Post-Graduate School in Orthopaedics and Traumatology
A.Y. 2006-07 TO 2011-12 **TISSUE MECHANICS AND DESIGN OF MECHANICAL STRUCTURES IN BIOMEDICAL FIELDS**
- PROF. M. FRALDI
Subject Area: ICAR/08
University of Naples Federico II
Master's Degree in Biomedical Engineering
A.Y. 2006-07 TO 2011-12 **MECHANICS OF MATERIALS AND STRUCTURES III**
- PROF. M. FRALDI
Subject Area: ICAR/08
University of Naples Federico II
Bachelor's Degree in Biomedical Engineering
A.Y. 2006-07 TO 2011-12 **MECHANICS OF MATERIALS AND STRUCTURES II**
- PROF. M. FRALDI
Subject Area: ICAR/08
University of Naples Federico II
Bachelor's Degree in Biomedical Engineering

TEACHING ACTIVITIES – DEGREE THESIS

A.Y. 2018-19	SUPERVISOR OF MASTER'S THESIS Elasticity and damage to predict intra-operative risk fracture in THA University of Naples Federico II Master's Degree in Biomedical Engineering
A.Y. 2017-18	SUPERVISOR OF MASTER'S THESIS Analytical Solutions for the prediction of intraoperative fracture risk University of Naples Federico II Master's Degree in Biomedical Engineering
A.Y. 2016-17	SUPERVISOR OF MASTER'S THESIS ISO 7206 fatigue behavior and mechanical performance of optimized hip implant University of Naples Federico II Master's Degree in Biomedical Engineering
A.Y. 2016-17	SUPERVISOR OF MASTER'S THESIS Aseptic mobilization of the hip prosthesis: stress-shielding calculation University of Naples Federico II Master's Degree in Biomedical Engineering
A.Y. 2015-16	SUPERVISOR OF MASTER'S THESIS Inverse shoulder biomechanics prosthesis University of Naples Federico II Master's Degree in Biomedical Engineering
A.Y. 2014-15	CO-SUPERVISOR OF MASTER'S THESIS Element optimization of discrete carboresin continuous-fiber lattice structures University of Naples Federico II Master's Degree in Materials Engineering
A.Y. 2013-14	CO-SUPERVISOR OF MASTER'S THESIS Biomechanical analysis of fracture risk index using CT image-based finite element modeling University of Naples Federico II Master's Degree in Biomedical Engineering
A.Y. 2013-14	CO-SUPERVISOR OF MASTER'S THESIS The Quest for Stiff Design with Composite Materials using Topology Optimization University of Naples Federico II Master's Degree in Materials Engineering
A.Y. 2012-13	CO-SUPERVISOR OF MASTER'S THESIS Computational Strategies in Non-Standard Topology Optimization Procedures University of Naples Federico II Master's Degree in Materials Engineering
A.Y. 2009-10	CO-SUPERVISOR OF MASTER'S THESIS Dynamic Response Stability in Structures of Biomechanical Interest University of Naples Federico II Master's Degree in Biomedical Engineering

- A.Y. 2008-09 **CO-SUPERVISOR OF MASTER'S THESIS**
Biomechanics of Capsular Contracture in Breast Implants
University of Naples Federico II
Master's Degree in Biomedical Engineering
- A.Y. 2008-09 **CO-SUPERVISOR OF BACHELOR'S THESIS**
Computational Strategies for the Optimization of High-Performance Materials (HPMs)
University of Naples Federico II
Bachelor's Degree in Mechanical Engineering
- A.Y. 2008-09 **CO-SUPERVISOR OF BACHELOR'S THESIS**
State of the Art in Biomechanical Modeling of Thermal Tissue
University of Naples Federico II
Bachelor's Degree in Biomedical Engineering
- A.Y. 2007-08 **CO-SUPERVISOR OF MASTER'S THESIS**
Fracture Risk Assessment Using Bone Strength-Density Correlation Laws
University of Naples Federico II
Master's Degree in Biomedical Engineering
- A.Y. 2007-08 **SUPERVISOR OF MASTER'S THESIS**
Remodeling Phenomenon of Biological Tissues by Gurson's Poroelasticity Models
University of Naples Federico II
Master's Degree in Biomedical Engineering
- A.Y. 2007-08 **SUPERVISOR OF MASTER'S THESIS**
Automatic Numerical Model Reconstruction and Topological Optimization of a Hip Prosthesis
University of Naples Federico II
Master's Degree in Biomedical Engineering
- A.Y. 2006-07 **SUPERVISOR OF MASTER'S THESIS**
Dynamic Characterization of Interfaces with Microstructures: Applications in Biomechanics
University of Naples Federico II
Master's Degree in Biomedical Engineering
- A.Y. 2006-07 **CO-SUPERVISOR OF BACHELOR'S THESIS**
FEM Analysis of Stress in Spinal Biomechanical Unit with Intervertebral Disc Implantation
University of Naples Federico II
Bachelor's Degree in Biomedical Engineering
- A.Y. 2006-07 **CO-SUPERVISOR OF MASTER'S THESIS**
Zirconia Dental Bridge Foil Reinforcement Solution
University of Naples Federico II
Master's Degree in Biomedical Engineering
- A.Y. 2006-07 **CO-SUPERVISOR OF MASTER'S THESIS**
Parametric Evaluation of Spongy Bone-Intervertebral Screw Friction by Finite Element Analysis
University of Naples Federico II
Master's Degree in Biomedical Engineering

FIRST STUDIES

10.05.2013

PHD

STRUCTURAL ENGINEERING – STRUCTURAL MECHANICS
TOPOLOGY OPTIMIZATION STRATEGIES IN MULTI-PHYSICS PROBLEMS
Evaluation expressed by the Examining Committee: EXCELLENT
Subject Area: ICAR/08
University of Naples Federico II
Department of Structures for Engineering and Architecture (DiSt)

FROM 01.03.2010 TO
28.02.2013

PHD XXV CYCLE

STRUCTURAL ENGINEERING – STRUCTURAL MECHANICS
TOPOLOGY OPTIMIZATION STRATEGIES IN MULTI-PHYSICS PROBLEMS
Supervisor: prof. M. Fraldi
Subject Area: ICAR/08
University of Naples Federico II
Department of Structures for Engineering and Architecture (DiSt)

09.12.1992

REGISTRATION WITH THE ORDER OF ENGINEERS OF THE PROVINCE OF NAPLES

REGISTRATION WITH THE ORDER OF ENGINEERS
PROVINCE OF NAPLES
N. 11281

28.10.1992

QUALIFICATION TO PRACTICE AS AN ENGINEER

26.02.1992

MASTER'S DEGREE IN ELECTRONIC ENGINEERING WITH VOTE 103/110

ANALYSIS OF WINDOWS THAT CAN BE USED FOR NUMERICAL SIGNAL PROCESSING
IN THE FREQUENCY DOMAIN
Supervisor: prof. F. Cennamo
University of Naples Federico II
Department of Electrical Engineering and Information Technology (DIETI)

POST-GRADUATE STUDIES IN STRUCTURAL ENGINEERING

FROM 29.06.2011
TO 05.07.2011

PH.D. COURSE: TOPOLOGICAL OPTIMIZATION: THEORY, METHODS, AND APPLICATIONS

Technical University of Denmark (DTU) - Copenhagen, Denmark
Subject Area: ICAR/08
Danish Center for Applied Mathematics and Mechanics (DCAMM)
Proff. O. Sigmund e M.P. Bendsøe

FROM 03.05.2010 TO
05.05.2010

COURSE: STRUCTURAL ANALYSIS FOR FINITE ELEMENTS OF NON-LINEAR AND COUPLED PROBLEMS: ELASTOPLASTICS, THERMOELASTICS, AND THERMOPLASTICS

Polytechnics of Milan
Subject Area: ICAR/08
Department of Structural Engineering (DiSt)
Proff. U. Perego e C. Comi

FROM 20.09.2007 TO
27.09.2007

COURSE: PLASTICITY AND DAMAGE OF MATERIALS AND INTERFACES

University of Naples Federico II
Subject Area: ICAR/08
Department of Structural Engineering (DiSt)
Prof. L. Nunziante
Institute of Fundamental Technology Research, Warsaw Poland
prof Z. Mróz

FROM 15.01.2007 TO
24.01.2007

COURSE SCHOOL OF OPTICAL TECHNOLOGIES: CHARACTERIZATION AND ANALYSIS OF MATERIALS AND SYSTEMS

University of Naples Federico II
Department of Physical Sciences
CNR – National Research Center
INFN – National Institute of Matter Physics
COHERENTIA

FROM 15.06.1997 TO
20.06.1997

SCHOOL COURSE: INTRODUCTION TO MATERIAL SCIENCE AND CERAMIC MATERIALS

AIMAT Italian Association of Materials Engineering
University of L'Aquila
Department of Chemistry, Chemical Engineering, and Materials

POST-GRADUATE STUDIES IN BIOMECHANICS

FROM 30.01.2006 TO
10.02.2006

COURSE: SPINE BASIC STUDIES

Synthes University College of Spinal Studies
Philadelphia, Pennsylvania

FROM 28.11.2004 TO
02.12.2004

CORSO: EUROPEAN ADVANCED TRAUMA STUDIES

Smith&Nephew
Muster, Germany

FROM 21.10.2002 TO
26.10.2002

ADVANCED SPINE SURGERY COURSE: CYPHOPLASTY

Kyphon EU
Brussels, Belgium

FROM 03.04.1998 TO
03.04.1998

ADVANCED SPINE SURGERY COURSE: LUMBOSACRAL ARTHRODESIS: TECHNIQUES, INDICATIONS, AND COMPLICATIONS

Association of European Research Groups for Spinal Osteosynthesis (Argos)
Lille, France

FROM 14.07.1997 TO
19.07.1997

COURSE: III NATIONAL COURSE OF BIOMECHANICS: PROSTHETIC IMPLANTS: BIOMECHANICS AND BIOMATERIALS

Italian Society of Biomechanics in Orthopaedics and Traumatology (SIBOT)
Interuniversity Research Center in Materials for Biomedical Engineering (CIRMIB)
Biomaterials Interdivisional Group (GIB)
Italian Society of Biomaterials (SIB)
Ischia (NA)

- FROM 07.02.1197 TO **COURSE: ADVANCED SPINE SURGERY: THE *IN SITU* MODELING TECHNIQUE FOR THE TREATMENT OF SPINE PATHOLOGIES**
07.02.1997 Association of European Research Groups for Spinal Osteosynthesis (Argos)
Paris, France
- FROM 18.11.1996 TO **COURSE: II NATIONAL COURSE OF BIOMECHANICS: BIOMECHANICS OF SPORT AND REHABILITATION MEDICINE**
23.11.1996 Italian Society of Biomechanics in Orthopaedics and Traumatology (SIBOT)
Interuniversity Research Center in Materials for Biomedical Engineering (CIRMIB)
Biomaterials Interdivisional Group (GIB)
Italian Society of Biomaterials (SIB)
Martina Franca (TA)
- FROM 01.07.96 TO **COURSE SCHOOL: BIOCOMPATIBILITY: BIOLOGICAL AND CLINICAL ASPECTS**
04.07.96 Interuniversity Research Center in Materials for Biomedical Engineering (CIRMIB)
Ischia (NA)
- FROM 27.11.95 TO **COURSE: I NATIONAL COURSE OF BIOMECHANICS: FUNDAMENTALS OF BIOMECHANICS**
31.11.95 Italian Society of Biomechanics in Orthopaedics and Traumatology (SIBOT)
Interuniversity Research Center in Materials for Biomedical Engineering (CIRMIB)
Biomaterials Interdivisional Group (GIB)
Italian Society of Biomaterials (SIB)
Martina Franca (TA)
- FROM 27.11.95 TO **MASTER IN BIOMATERIALS**
14.07.97 Italian Society of Biomechanics in Orthopaedics and Traumatology (SIBOT)
Interuniversity Research Center in Materials for Biomedical Engineering (CIRMIB)
Biomaterials Interdivisional Group (GIB)
Italian Society of Biomaterials (SIB)
Martina Franca (TA)

PUBLICATIONS – INTERNATIONAL JOURNALS

- 2025 **STEERING CRACKS VIA AUXETIC ZEBRA-COMPOSITES**
Palladino S, Fraldi M, Minutolo V, Esposito L
Engineering Fracture Mechanics. 2025. 327. 111486
10.1016/j.engfracmech.2025.111486
- 2024 **STRESS EQUALIZING IN OPTIMAL DESIGN OF HIGH-TOUGHNESS LATTICE STRUCTURES**
Esposito L, Cutolo A, Minutolo V, Sacco E, Fraldi, M
Materials & Design. 2024. 241. 112887
DOI: <https://doi.org/10.1016/j.matdes.2024.112887>
- 2024 **AN EFFECTIVE FREE-MESHING AND LINEAR STEP-WISE PROCEDURE TO PREDICT CRACK INITIATION AND PROPAGATION**
Esposito, L., Palladino, S., Minutolo, V.
Theoretical and Applied Fracture Mechanics. 2024. 130. 104240
DOI: <https://doi.org/10.1016/j.tafmec.2023.104240>

- 2023 **IMPLANTABLE 3D PRINTED DEVICES-TECHNOLOGIES AND APPLICATIONS.**
Handbook of Surgical Planning and 3D Printing
Glennon A, Esposito L, Gargiulo P
DOI: <https://doi.org/10.1016/B978-0-323-90850-4.00012-0>
- 2022 **SYMMETRY BREAKING AND EFFECTS OF NUTRIENT WALKWAY IN TIME-DEPENDENT BONE REMODELING INCORPORATING POROELASTICITY**
Esposito, L., Minutolo, V, Gargiulo, P, Fraldi, M.
Biomechanics and Modeling in Mechanobiology. 2022. 21(3): 999-1020
DOI: <https://doi.org/10.1007/s10237-022-01573-6>
- 2022 **FUNCTIONALLY GRADED PLATE FRACTURE ANALYSIS USING THE FIELD BOUNDARY ELEMENT METHOD**
Palladino, S., Esposito, L., Ferla, P., Zona, R., Minutolo, V.
Applied Sciences (Switzerland). 2021. 11(18). 8465
DOI: <https://doi.org/10.3390/app11188465>
- 2022 **SEMIANALYTICAL LOWER-BOUND LIMIT ANALYSIS OF DOMES AND VAULTS**
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14.07.2022
Palladino S, Esposito L, Zona R, Minutolo V, Sacco E
XIII Convegno Gruppo Italiano di Meccanica Computazionale, GIMC
X Convegno Gruppo Meccanica dei Materiali, GMA
II Convegno Gruppo Biomeccanica, GBMA
Reggio Calabria, Italy
- FROM 04.09.2022 TO **THE ROLE OF THE INTERSTITIAL FLUID CONTENT IN BONE REMODELING**
08.09.2022
Esposito L, Zona R, Palladino S, Minutolo V, Fraldi M
Italian Association of Theoretical and Applied Mechanics, AIMETA
Palermo, Italy
- FROM 04.09.2022 TO **LOWER BOUND LIMIT ANALYSIS THROUGH DISCONTINUOUS FINITE ELEMENTS AND SEMI-ANALYTICAL PROCEDURES**
08.09.2022
Zona R, Esposito L, Ferla P, Palladino S, Totaro E, Minutolo V
Italian Association of Theoretical and Applied Mechanics, AIMETA
Palermo, Italy
- FROM 12.07.2021 TO **BUCKLING OF CIRCULAR RINGS: SOME ISSUES RELATED TO THE SETTINGS OF FINITE ELEMENTS ANALYSES**
14.07.2021
Mascolo I, Cutolo A, Esposito L, Guarracino F
8th International Conference on Coupled Instabilities in Metal Structures, CISM
Lodz, Poland

- FROM 17.09.2020 TO **PATIENT-SPECIFIC FBEM-BASED EVALUATION OF PERIPROSTHETIC FEMUR FRACTURE RISK IN TOTAL HIP ARTHROPLASTY**
20.09.2020
Esposito L, Zona R, Ferla P, Ruocco E, Palladino S, Totaro E, Minutolo V
25th International Congress of Theoretical and Applied Mechanics
Milan, Italy
- FROM 22.08.2021 TO **A NEW BIO-INSPIRED OPTIMIZATION STRATEGY FOR DESIGNING STRESS OF TRUSS-LIKE STRUCTURES**
27.08.2021
Minutolo V, Esposito L, Sacco E, Fraldi M
25th International Congress of Theoretical and Applied Mechanics
Milan, Italy
- FROM 17.09.2020 TO **FEM ANALYSIS OF A DENTAL ARC WITH PERIODONTAL TEMPORARY RIGID SPLINT**
20.09.2020
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25th International Congress of Theoretical and Applied Mechanics
Milan, Italy
- FROM 17.09.2020 TO **ANALYTICAL APPROACH TO ESTIMATE PATIENT-SPECIFIC PERIOPERATIVE FEMUR FRACTURE RISK**
20.09.2020
Esposito L, Minutolo V, Gargiulo P, Jonson H, Fraldi M
Nordic Baltic Conference Biomedical Engineering and Medical Physics
Reykjavik, Iceland
- FROM 01.06.2020 TO **A REGRESSION APPROACH TO ASSESS BONE MINERAL DENSITY OF PATIENTS UNDERGOING TOTAL HIP ARTHROPLASTY THROUGH GAIT ANALYSIS**
03.06.2020
Recenti M, Ricciardi C, Aubonnet R, Esposito L, Jonson H, Gargiulo P
IEEE International Workshop on Medical Measurement and Applications (MEMEA)
Bari, Italy
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Zona R, De Cristofaro M, Esposito L, Ferla P, Palladino S, Totaro E, Olivares L, Minutolo V
5th International Conference on Internet of Things, Big Data and Security
- FROM 15.09.2019 TO **EXACT HOMOGENIZATION AND REDESIGN REQUIREMENTS IN COMPOSITES REINFORCED WITH MONOCLINIC TRIGONAL HELICALLY WOUND FIBRES**
19.09.2019
Cutolo A, Carotenuto AR, Esposito L, Bosia F, Pugno NM, Fraldi M
Italian Association of Theoretical and Applied Mechanics, AIMETA
Rome, Italy
- FROM 15.09.2019 TO **HYBRID STRUCTURAL OPTIMIZATION FOR APPLICATIONS IN LARGE-SPAN CIVIL STRUCTURES**
19.09.2019
Argenziano M, Esposito L, Fraldi M
Italian Association of Theoretical and Applied Mechanics, AIMETA
Rome, Italy
- FROM 02.06.2018 TO **STRESS SHIELDING IN BONE AFTER HIP PROSTHESES OPTIMIZATION**
06.06.2018
Esposito L, Bifulco P, Cesarelli M, Gargiulo P, Cristofolini L, Fraldi M,
10th European Solid Mechanics Conference, ESMC
Bologne, Italy
- FROM 02.06.2018 TO **TOPOLOGY OPTIMIZATION-GUIDED STIFFENING OF COMPOSITE PLATES VIA**

- 06.06.2018 **AUTOMATED FIBRE PLACEMENT**
Esposito L, Fraldi M,
10th European Solid Mechanics Conference, ESMC
Bologne, Italy
- FROM 14.09.2016 TO **ASSESSMENT METHOD FOR FRACTURE RISK AND BONE MINERAL DENSITY**
16.09.2016 **CHANGES AS SUPPORT FOR IMPLANT DECISION MAKING IN TOTAL HIP REPLACEMENT**
Menichetti A, Gargiulo P, GislasonMK,Edmunds K, Hermannsson T, Jonsson Jr H, Esposito L, Bifulco P, Cesarelli M, FraldiM,CristofoliniL
24th Annual Meeting
European OrthopaedicReseach Society, EORS
Bologne, Italy
- FROM 14.09.2016 TO **PRE-OPERATIVE ASSESSMENT FOR PROSTHESIS SELECTION IN TOTAL HIP**
16.09.2016 **ARTHROPLASTY**
Gislason MK, EdmundsK, Menichetti A, Hermannsson T, Jonsson Jr H, Esposito L, Bifulco P, Cesarelli M, Fraldi M, Gargiulo P
24th Annual Meeting
European OrthopaedicReseach Society, EORS
Bologne, Italy
- FROM 20.06.2016 TO **CT FEMUR ALIGNMENT BEFORE AND AFTER TOTAL HIP ARTHROPLASTY**
22.06.2016
Iuppariello, L,Bifulco P, Fraldi M, Esposito L, Gargiulo P, Romano M, Cesarelli M
National Group of Bioengineering, GNB
Naples, Italy
- FROM 01.09.2015 TO **ASSESSING BONE CHANGES AFTER TOTAL HIP ARTHROPLASTY WITH**
05.09.2015 **COMPUTED TOMOGRAPHY**
Y. Pauchard, P. Gargiulo, H. Jonsson jr, M. Cesarelli, L. Esposito, P. Bifulco, M. Fraldi, B. Helgason
13th International Symposium
Computer Methods in Biomechanics and Biomedical Engineering, CMBBE
Montreal, Canada
- FROM 30.09.2013 TO **TENSEGRITY AND RELATED PRINCIPLES IN STRUCTURAL ENGINEERING**
02.10.2013
Cutolo A, Perrella G, Esposito L, Fraldi M.
XXIV Italian Steel Construction Days
College of Steel Technicians, CTA
Turin, Italy
- FROM 18.12.2012 TO **ON THE INFLUENCE OF TENSILE-TORSION COUPLING IN THE MECHANICAL**
19.12.2012 **BEHAVIOUR OF RUBBER/CORD COMPOSITES**
Perrella G. Cutolo A, Esposito L, Cotugno S, Pastore Carbone MG, Mensitieri G, Fraldi M.
Rubber Reinforcement and Property Modification By Fillers, Fibres, And Textiles
The Rubber in Engineering Group of the Institute of Materials, Minerals, and Mining
Queen Mary University of London, London, England
- FROM 12.09.2011 TO **ANALYTICAL SOLUTIONS OF COMPOUND POROELASTIC MEDIA UNDER**
15.09.2011 **DYNAMIC LOADS: APPLICATIONS TO SOLID TUMORS**
Fraldi M, Capone C, Esposito L, Carannante F, Cutolo A, Netti PA.

- XX Conference
Italian Association of Theoretical and Applied Mechanics, AIMETA
Bologne, Italy
- FROM 12.09.2011 TO **MICROMECHANICS AND TOPOLOGY OPTIMIZATION OF INHOMOGENEOUS AND ELLIPTICALLY ANISOTROPIC DEPLETED MEDIA WITH ORIENTED MICROSTRUCTURE**
15.09.2011
Perrella G, Esposito L, Pernice MC, Fraldi M.
- XX Conference
Italian Association of Theoretical and Applied Mechanics, AIMETA
Bologne Italy
- FROM 29.06.2011 TO **TOPOLOGICAL OPTIMIZATION IN HIP PROSTHESIS DESIGN**
05.07.2011
Fraldi M, Esposito L, Cutolo A, Perrella G, Cowin SC.
Topological Optimization – Theory, Methods, and Applications
Technical University of Denmark (DTU)
Danish Center for Applied Mathematics and Mechanics (DCAMM)
Copenhagen, Denmark
- FROM 29.05.2011 TO **MODELING CORD-RUBBER COMPOSITES FOR TIRE APPLICATIONS**
01.06.2011
Pastore Carbone MG, Cutolo A, Perrella G, Esposito L, Mensitieri G, Fraldi M.
Advances in Polymer-based materials and related Technologies
Italian Association of Materials Engineering, AIMAT
Capri (NA), Italy
- FROM 14.01.2011 TO **NEW APPROACH TO CAPSULAR CONTRACTURE: A BIOMECHANICAL STUDY**
15.01.2011
Molea G, Fraldi M, Esposito L, Tartaglione C.
2nd International Breast Surgery Workshop
European Association of Plastic Surgeons, EURAPS 2011
Rome, Italy
- FROM 20.11.2010 TO **TOPOLOGICAL OPTIMIZATION IN HIP PROSTHESIS DESIGN**
24.11.2010
Fraldi M, Esposito L, Perrella G, Cutolo A, Cowin SC.
95° National Conference
Italian Society of Orthopedy and Traumatology, SIOT
Rome, Italy
- FROM 23.09.2010 TO **NEW CONCEPTS IN CAPSULAR CONTRACTURE IN BREAST IMPLANTS: THE ROLE OF BIOMECHANICS**
26.09.2010
Molea G, Fraldi M, Esposito L, Tartaglione C.
59° National Conference
Italian Society of Plastic Reconstructive and Aesthetic Surgery, SICPRE
Siena, Italy
- FROM 14.09.2009 TO **A PROPOSAL FOR UNIFIED ELASTIC MODULI - MATRIX VOLUME FRACTION LAW FOR POROUS RVES**
17.09.2009
Perrella G, Esposito L, Cutolo A, Fraldi M.
XIX Conference

		Italian Association of Theoretical and Applied Mechanics, AIMETA Ancona, Italy
FROM 20.08.2009 22.09.2009	TO	X-RAY-BASED TECHNIQUE FOR ESTIMATING BONE FRACTURE RISK Volpe V, Fraldi C, Esposito L, Fraldi M. 2nd WSEAS International Conference on Biomedical Electronics and Biomedical Informatics, BEBI 2009 Moscow, Russia
FROM 09.09.2007 19.09.2007	TO	TOPOLOGICAL OPTIMIZATION-BASED DESIGN CRITERIA FOR HIP PROSTHESIS Fraldi M, Esposito L, Cutolo A, Perrella G, Pernice MC. III International Congress on Computational Bioengineering, ICCB Isla de Margarita, Venezuela
FROM 23.02.2007 24.02.2007	TO	TOPOLOGICAL OPTIMIZATION FOR FEMUR PROSTHESES DESIGN Cutolo A, Esposito L, Pernice MC, Perrella G, Fraldi M. I° Reunion Group Materials Italian Association of Theoretical and Applied Mechanics, AIMETA Trento, Italy

PERSONAL SKILLS

MOTHER LANGUAGE ITALIAN

OTHER LANGUAGES:	READING	WRITING	SPOKEN	OVERALL
ENGLISH	FLUENT	FLUENT	ADVANCED	ADVANCED

COMMUNICATION SKILLS Acquired during the teaching experience at the University of Naples Federico II, at the University of Campania Luigi Vanvitelli, and during the professional experience in different company as a Product Manager. EXCELLENT

ORGANIZATIONAL AND MANAGERIAL SKILLS Acquired during the professional experience in the company as a Product Manager. EXCELLENT

FINITE ELEMENT METHOD MODELLING (FEM) Information Systems for Finite Element Modeling (FEM) EXCELLENT
APDL (Ansys Parametric Design Language) Programming Language EXCELLENT
UIDL Programming Language (Ansys User Interface Design Language) EXCELLENT
Macro development in the Ansys environment EXCELLENT

IT SKILLS - OPERATING SYSTEMS Microsoft Dos EXCELLENT
Microsoft Windows EXCELLENT
Unix RedHat GOOD

IT SKILLS - INFORMATION SYSTEMS Management Information Systems for Distribution and Production. EXCELLENT
Information Systems Analysis Methods EXCELLENT

IT SKILLS – SOFTWARE

OFFICE AUTOMATION	Microsoft Word	EXCELLENT
	Microsoft Excel	EXCELLENT
	Microsoft Powerpoint	EXCELLENT
	Microsoft Access	EXCELLENT
COMPUTER-AIDED DESIGN	Rhinoceros	EXCELLENT
	Autodesk Autocad	ADVANCED
FINITE ELEMENT METHOD (FEM)	Ansys Multiphysics	EXCELLENT
	LS-Dyna	EXCELLENT
	Fluent	ADVANCED
	Comsol	BASIC
PROGRAMMING LANGUAGES	Fortran	EXCELLENT
	Python	EXCELLENT
	Basic	EXCELLENT
	Pascal	EXCELLENT
	Cobol	EXCELLENT
	Prolog	EXCELLENT
	Visual Basic	EXCELLENT
SYMBOLIC CALCULATION	Wolfram Mathematica	EXCELLENT
NUMERICAL CALCULATION	Mathworks Matlab	EXCELLENT
MODELING FROM FILE DICOM	Materialize	EXCELLENT
IMAGING	Photoshop	ADVANCED

NAPLES, 27/11/2025

LUCA ESPOSITO