

## FEDERICA MIGLIACCIO - CURRICULUM VITAE

Born in Voghera (PV) on August 30<sup>th</sup>, 1960.

Full Professor of “Topography and Cartography” at Politecnico di Milano.

**July 1979:** High School Diploma (Maturità Classica), grade 60/60.

**December 19<sup>th</sup>, 1986:** M. Sc Degree in Civil Engineering at Politecnico di Milano (grade 92/100), with a Dissertation on “Pre-processing of laser telemetry data for geodynamical applications” (Tutor: Prof. F. Sansò). In the thesis, different approaches were studied for the pre-processing of laser ranging observations, in particular Least Squares collocation was compared with a polynomial interpolation technique, showing the good behavior of the latter method.

**April 22<sup>nd</sup>, 1992:** Ph. D. in Geodetic and Topographic Sciences, with a Dissertation on “Aristoteles: analysis of the data from a gradiometric mission for the determination of the anomalous gravity field” (Tutor: Prof. F. Sansò). In the thesis, the problem of a gravity model estimation from data of a satellite gradiometry mission was studied (at the time, such a mission had not been launched nor included in the ESA programs); the so called “space-wise” approach was applied to solve the boundary value problem, as suggested by Prof. Sansò, and the feasibility of this method for the data treatment and its advantages were demonstrated.

From **January 1<sup>st</sup>, 1986:** Temporary research fellow “collaboratore esterno” at the Institute of Surveying, Photogrammetry and Geophysics (later incorporated in the Department of Hydraulics, Environmental and Surveying Engineering, currently Department of Civil and Environmental Engineering) of Politecnico di Milano.

From **December 16<sup>th</sup>, 1992:** Researcher (on a two-year term temporary position) at the Institute for the Geophysics of the Lithosphere of CNR (Italian national Research Council) in Milano. By contract, she was assigned to work at the Department of Hydraulics, Environmental and Surveying Engineering of Politecnico di Milano, in the frame of the International Geoid Service (IGeS).

From **December 1<sup>st</sup>, 1994:** Researcher (permanent position) with the Department of Hydraulics, Environmental and Surveying Engineering of Politecnico di Milano (Surveying Section), in the academic field of “Topography and Cartography”.

From **November 1<sup>st</sup>, 1998:** Associate professor with the Department of Hydraulics, Environmental and Surveying Engineering (Surveying Section) of Politecnico di Milano, in the academic field of “Topography and Cartography”, currently denoted as SSD ICAR/06. As of November 1<sup>st</sup> 2001, confirmed after the required three-year probation period. As of January 2013, the Department has become Department of Civil and Environmental Engineering (DICA).

From **January 8<sup>th</sup>, 2018:** Full professor of “Topography and Cartography”, with the Department of Civil and Environmental Engineering (DICA) at Politecnico di Milano.

From **March 1<sup>st</sup>, 2001 to date:** member of the Faculty of the Ph.D. Program in “Geodetic and Topographic Sciences”, currently Ph.D. Program in “Environmental and Infrastructure Engineering – Geomatics Area” at Politecnico di Milano.

From **January 2013 to December 2016:** member and deputy chair of the Scientific Committee of the Department of Civil and Environmental Engineering of Politecnico di Milano.

From **January 2017 to date:** member and chair of the Scientific Committee of the Department of Civil and Environmental Engineering of Politecnico di Milano.

**Author or co-author** of over 130 academic and didactic publications, of which 60 at the international level.

16 papers are listed in the Web of Science (WoS) database and 22 papers are listed in the Scopus database (as of August 2017).

## **Membership in scientific associations**

Member of the **IAG** - International Association of Geodesy.

Member of IAG Commissions:

**1995:** member of IAG Sub-Commission “Application of Boundary Value Techniques to Satellite Gradiometry”, chaired by Prof. W. Keller, University of Stuttgart, in the frame of Commission 7 “Gravity Field Determination by Satellite Gravity Gradiometry”.

**2007 – 2011:** Member of IAG Sub-Commission 2.3 “Dedicated Satellite Gravity Mapping Missions”, chaired by Prof. R. Pail (TUM), promoting scientific investigations concerning the dedicated satellite gravity field missions CHAMP, GRACE and GOCE, the development of alternative methods and new approaches for global gravity field processing also including complementary gravity field data types, as well as interfacing to user communities and relevant organizations.

**From 2002:** member of the Italian Society of Celestial Mechanics and Astrodynamics - SIMCA.

**From 2006:** member of the Italian Physical Society - SIF.

## **Main research lines (in short)**

- Satellite geodesy, with particular interest on satellite gradiometry, such as study of the data analysis for the ESA GOCE mission for the recovery of the Earth gravity field by the “space-wise” approach; studies of “GRACE-follow on” and “GOCE-follow on” concepts, focusing on Laser Doppler Interferometry and Cold Atom Interferometry sensors applications for the Earth gravity field observation and for high resolution monitoring of mass variations which occur on and below the Earth surface.
- Geographical Information Systems, with studies on Spatial Data Base design and management, geo-statistical analysis of spatial data, geo-data quality assessment; a specific field of interest regards the application and relevance of GIS technologies as a support to historical research, ancient maps geo-referencing and GIS implementation for geo-data extracted from medieval archival documents.

## **Teaching activities in the B.Sc and M.Sc programs**

**From 1988 to 1992** (temporary research fellow with the Institute of Surveying, Photogrammetry and Geophysics of Politecnico di Milano): practical lessons on topographic instruments, topographic surveys, design and compensation of topographic networks and data treatment for various courses in the M.Sc. program in Civil Engineering.

**From 1994 to 1998** (researcher with the Department of Hydraulics, Environmental and Surveying Engineering of Politecnico di Milano - Surveying Section): practical lessons for various courses in the M.Sc. programs in Civil Engineering and in Urban Planning (e.g. courses in statistics, data treatment, cartography).

**From the academic year 1998/1999** (associate professor with the Department of Hydraulics, Environmental and Surveying Engineering of Politecnico di Milano - Surveying Section): professor of the course “Photogrammetry” and of the course “Thematic and automatic cartography”, both for the B.Sc. program in Urban Planning, until the academic year 2004/2005.

**From the academic year 2005/2006** (associate professor with the Department of Hydraulics, Environmental and Surveying Engineering of Politecnico di Milano - Surveying Section): professor of the course “Applications of Geographical Information Systems” (4 CFU) for the B.Sc. program in Urban Planning, until the academic year 2007/2008.

**From the academic year 2004/2005** (associate professor with the Department of Hydraulics, Environmental and Surveying Engineering, later Department of Civil and Environmental Engineering, of Politecnico di Milano - Surveying Section): professor of the course “Geographical Information Systems” (10 CFU) for the B.Sc. and M.Sc. programs in Environmental Engineering and in Civil Engineering, **until the present academic year.**

**From the academic year 2008/2009** (associate professor with the Department of Hydraulics, Environmental and Surveying Engineering, later Department of Civil and Environmental Engineering, of Politecnico di Milano - Surveying Section): professor of the course “Geographical Information Systems Planning” (8 CFU) for the B.Sc. program in Urban Planning, **until the present academic year.**

**Tutor** of 70 Dissertations for the B.Sc. and M.Sc. in Environmental Engineering, in Civil Engineering and in Urban Planning.

**Author or co-author** of 5 didactic books on statistics and on Geographical Information Systems:

M.A. Brovelli e F. Migliaccio (1989). *Trattamento Statistico dei Dati: esercizi*. CLUP, Milano.

A. Albertella, M.A. Brovelli, F. Migliaccio, G. Sona (1998). *Esercizi di trattamento statistico dei dati (Vol 1 e Vol. 2)*. Città Studi Edizioni, Milano.

F. Migliaccio (2001). *Cartografia tematica e automatica*. Libreria Clup, Milano, 2001.

F. Migliaccio (2007). *Sistemi Informativi Territoriali e cartografia*. Maggioli Editore.

F. Migliaccio e D. Carrion (2016). *Sistemi Informativi Territoriali: principi e applicazioni*. UTET Università.

**Teaching activities in the Ph.D. program** in “Environmental and Infrastructure Engineering – Geomatics Area” (formerly “Geodetic and Topographic Sciences”)

**From the academic year 2002/2003: professor of the course “Satellite Geodesy”, until the present academic year.**

**Supervisor and tutor** of the following Ph.D. Dissertations

- Daniele Marzi: “Problematiche connesse alla gestione di un SIT a livello comunale e alla sua pubblicazione su Internet”, Ph.D. Program XIX Cycle, academic year 2006/2007.
- Cynthia Zambrano: “Progettazione e realizzazione del Sistema Informativo Territoriale Geografie dell’Italia Medievale (XIII – XV sec.)”, Ph.D. Program XXV Cycle, academic year 2012/2013.
- Guido Minini: “Georeferenziazione, analisi e gestione di dati da documenti d’archivio: tecnologie GIS e geoservizi per la cartografia storica”, Ph.D. Program XXVIII Cycle, academic year 2015/2016.

**Co-tutor** of the following Ph.D. Dissertations

- Vincenza Tornatore: “Analysis and denoising of images: a new strategy”, Ph.D. Program XI Cycle, academic year 1997/1998.
- Mirko Reguzzoni: “GOCE: the space-wise approach to gravity field determination by satellite gradiometry”, Ph.D. Program XVI Cycle, academic year 2003/2004.
- Nikolaos Tselfes: “Global and local geoid modelling with GOCE data and collocation”, Ph.D. Program XX Cycle, academic year 2007/2008.