

## Curriculum vitae

### **Michel MESNARD**

PhD - Qualifications to supervise research and as a University Full Professor

Alumnus of University Paris 6 (Pierre & Marie Curie) and Ecole Normale Supérieure de Cachan-Saclay

Université de Bordeaux - Institut de Mécanique et d'Ingénierie - CNRS UMR 5295

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## *Conceive - Design - Implement and Operate ... in Research and Teaching for Research*

<b>Create Structure</b>	. Creation of a research field/group around designing Medical Devices (MDs)	. Creation of a multidisciplinary Masters course in Biomaterials and Medical Devices
<b>Innovate Implement</b>	. Production of design procedures . Design of joint prostheses and articular orthoses	. Introduction of a project-based learning system for Masters degrees in Research . Introduction of undergraduate teaching modules on motivation and awareness
<b>Cooperate Contractualise Finance</b>	. Development and registration of two international patents for MDs . Research Engineer and Consultant	. Transfer of skills from Centres of Clinical Investigation and Technological Innovation
<b>Communicate Disseminate</b>	. 7 scientific conferences as invited speaker . 61 articles published in international journals (including CIRP 2013-14-16 & 2017)	. 2 pedagogical conferences as invited speaker . 2 international projects to introduce the ECTS credits system and distance learning
<b>Expert advisor</b>	. Expert advisor for European projects . Analysis of strategic areas of interest supported by bodies funding research	. Jury member for national examinations . Guiding students and developing talent from undergraduate level

Supervision p.4

Publication/Dissemination p.5

## Professional experience - Education

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### PROFESSIONAL QUALIFICATIONS, POSITIONS

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2015	<b>Qualified as a Full University Professor</b> (Conseil National des Universités, CNU60)
2009	<b>Habilitation à Diriger des Recherches</b> - Accreditation to supervise research in Mechanical Engineering, Mechanics, Bio-Mechanical Engineering and Biomechanics
2004	<b>PhD in Mechanics and Mechanical Engineering</b> Grau académico português de Doutor - Universidade de Aveiro n°120180134039-2018
1998 & 1999	Research Engineer and Consultant Mechanical Engineering and Design Methodology at Lectra Systems Company, Cestas-33, Fr.
1986	Professeur Agrégé in Mechanics and Mechanical Engineering at Univ. of Bordeaux
1985 - 1986	Director of Studies at the Regional Teacher Training Centre, Nouvelle Aquitaine, Fr. Design and implementation of a training programme for Technology teachers
1981 - 1985	Teacher in Technical Lycées (Nogent sur Marne-94 then Marseille-13, Fr.)
1976 - 1981	Student-teacher at University Paris 6 and Ecole Normale Supérieure, Cachan-94, Fr. Preparation for Second Degree Teachings

### EDUCATION

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2009	Accreditation to supervise research - Univ. of Bordeaux "Contributions to the development of biomechanical models of joints"
2001 - 2004	PhD in Mechanics and Mechanical Engineering - Univ. of Bordeaux Department of Mechanics and Physics "Creation and validation of a protocol to characterise the Temporomandibular Joint" (Grade "Très honorable")
1976 - 1981	Ecole Normale Supérieure de Cachan-94, Fr. and Univ. Paris 6 (Pierre & Marie Curie) Agrégation - National competitive examination (highest level) in Mechanics Bachelor and Masters degrees in Mechanical Engineering
1973 - 1976	Preparation Classes for the <i>Grandes Ecoles</i> at the Lycée G. Eiffel in Cachan and, in parallel, DEUG (Undergraduate) in Sciences and Matter Structure at University Paris 6

### FURTHER QUALIFICATIONS

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2013 - 2015	<b>Training course in Teaching Academic Content Through English</b>
2005 - 2006	Medical imaging - Modelling living tissue (CNRS)
2003 - 2004	Data analysis and processing (Univ. of Bordeaux)
2001	Data acquisition and signal processing (Univ. of Bordeaux)
2001	Comparative anatomy (Univ. of Bordeaux)

### LANGUAGES

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French	Native language
English	Fluent, in speaking, writing and reading (Internships Univ. of Poitiers, Fr. & CNRS)
Spanish	Good skills in speaking, writing and reading (Internships Univ. of Poitiers, Fr. & Salamanca, Es.)

## Expertise

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### EXPERTISE

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2014 ...	Expert advisor to the Health Research Board of Ireland
2012, 2014	Expert advisor to the European Commission
2012 ...	Expert advisor to the <i>Association Universitaire de la Francophonie</i>
Memberships	<b>3</b> international editorial boards <b>26</b> peer-review committees for international journals (reviewer) <b>5</b> scientific committees for international congresses (SB2010, TMJ2014, ISB2015, ICCB2015 ...) Conference session chair (SB2007, TMS2010, CFM2013, VCW2014, TMJ2014, ISB2015 ...)
2011 - 2015 Elected member	Board of the Institut de Mécanique et d'Ingénierie - CNRS UMR 5295 Scientific Board of the Physics and Mechanical Engineering Faculty - Univ. of Bordeaux Member of the course supervisory commission
Selection committees	Research Engineer at INSERM1026 - Univ. of Bordeaux Head of International Mobility - Univ. of Bordeaux Recruitment of senior lecturers at the <i>Institut Polytechnique</i> of Bordeaux
Selection panels	Entrance competitive examination for ESTIA, " <i>Ecole d'Ingénieurs</i> " (1997-2001) <b>8</b> national recruitment competitive examinations (Agrégation 1989-1992 and 1998-2001) Production of two question papers (8 hours examinations) for the written part of the <i>Agrégation</i> , national competitive examination in Mechanics and Mechanical Engineering
Thesis juries	<b>9</b> Doctoral thesis juries (Mechanical Engineering, Biomechanics) <b>5</b> thesis juries for candidates working in dentistry (Medical Devices)

## Research

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### CREATIONS AND COORDINATIONS

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2017	Health Network "Ecole Nationale Supérieures des Arts et Métiers" - CNRS UMR 5295
2011	Research group "Mechanical Engineering & Design - Medical Devices Design" - CNRS UMR 5295
2004	Research group "Osteoarticular Biomechanics" - CNRS UMR 5469

### INNOVATION, DEVELOPMENT AND SKILL TRANSFER

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2019	International patent - Hybrid bone-implant connection
2012	International patent registered for a Temporomandibular Joint Prosthesis
2008	Concept of a 3D micro-sensor deposited with INPI

### ACADEMIC COOPERATIONS, PROJECTS AND FUNDING

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2020 - 2022	European H2020 Enhanced Innovation Council - Future and Emerging Technologies (290k euro) Coordinator - University of Craiova, Ro. - Prof. O.Gingu - Profs. Y. Chemisky & M. Mesnard Biocomposite ceramics development - Under review
2013 - 2014	Joint project between Bordeaux Institute of Excellence and CNRS (1 year - <b>4 keuro</b> )
2011 - 2016	4 Invitations to the Univ. of Bordeaux for a Professor from the Univ. of Aveiro
2008 - 2010	Project for the CNRS and the Russian Foundation for Basic Research, Russia (3 years - <b>24 keuro</b> ) Technical Univ. of Perm, Russia Dept. of Theoretical Mechanics, Prof. Y.Nyashin and V.Lokhov
2004 - 2007	2 Projects for the Ministry of Foreign Affairs (4 years - <b>14 keuro</b> )
2002 ...	Laboratory for the Bioengineering of Tissues INSERM U1026, MCU D.Lenihouannen Department of Applied Medical and Surgical Anatomy, PU-PH. Ph.Caix Institute of Cognitive and Integrative Neurosciences CNRS UMR5287, Dr. JR.Cazalets Department Handicap and Nervous System EA 4136, PU-PH M.de Sèze Odontology and Maxillofacial Surgery Unit, PU-PH MJ.Boileau and MCU-PH C.Bazert

### INDUSTRIAL CONTRACTS AND FUNDING

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2012, 2019	<i>Société d'Activation du Transfert de Technologies</i> , Aquitaine Region, Fr. ( <b>90 keuro + 90 keuro</b> ) Department of Mechanics, Ing. JL.Chagnaud and M.Dupuy, N.Tamda and S.Cornet Aim: Transfer two patents "TMJ prosthesis international", "Hybrid bone-implant connection"
2014 - 2017	<i>Société Lagarrigue Aquitaine</i> , Pessac-33, Fr. ( <b>160 keuro</b> + PhD student salary for 3 years) Doctoral thesis - Grant from the <i>Association Nationale de la Recherche et de la Technologie</i> Aim: Design a corset to correct camptocormia
2012 - 2014	Project by the <i>Agence Nationale de la Recherche TECSAN</i> (3 years - <b>100 keuro</b> )
2010 - 2012	<i>Société S14 Implants</i> , Pessac-33, Fr. ( <b>160 keuro</b> + PhD student salary for 3 years) Doctoral thesis - Grant from the <i>Association Nationale de la Recherche et de la Technologie</i> Aim: Optimise the design of a dynamic spinal implant

### SUPERVISION

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- 8** Doctoral theses (Design Methodology, Optimization, Bio-Mechanical Engineering, Modelling, Characterization ...)
- 3** Doctoral theses in the frame of cooperation with companies (Lagarrigue SAS - S14 Implants - SmartBone)
- 2** Doctoral theses in the frame of international academic cooperation (Univ. EAFIT Medellin, Co. - A&M ParisTech)
- 4** "Thèses d'exercice" (Joint academic and medical supervision by Univ. of Bordeaux)
- 14** Research-based Masters Degrees in Mechanics and Engineering, Biomaterials and Medical Devices
- 2** Research-based Masters Degrees in Biomechanical Engineering with a co-supervisor from TEMA (Univ. Aveiro, Pt.)

## **SCIENTIFIC PUBLICATIONS AND INFLUENCE**

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**1** international patent registered in cooperation with the Univ. of Aveiro (2012 - TMJ prosthesis & Bone-Implant connection- FR1257637A1 - EP2879621A2 - US9517135B2 - WO2014023903A3)

**1** patent application registered at the INPI (2019 - Bone-Implant connection)

**61** publications in international peer-reviewed journals

**6** publications in the CIRP Proceedings - Best paper award Tokyo 2013 - Nantes 2014

**3** publications in national peer-reviewed journals

**1** book in an international cooperation

**1** chapter in an international work (book)

**7\*** plenary international conferences as invited speaker

**60\*\*** papers in published proceedings of international conferences

**51** papers in published proceedings of national conferences

**4** conferences as co-organiser

(French Congress of Mechanics 2013 - TMJ Disorders 2014 - 25<sup>th</sup> Congress Int. Society of Biomechanics 2015 - 6<sup>th</sup> Int. Conf. on Computational Bioengineering 2015)

Member of the "Association Française de Mécanique" (France)

Member of 4 Biomechanics Societies (France, Portugal, Russia and Europe)

Member of the Nouvelle-Aquitaine Association for Skills in Biomaterials and Implants (Nouvelle Aquitaine, Fr.)

**452** citations – 20<sup>th</sup> Nov. 2019

\* 2 of which presented pedagogical topics

\*\* 4 of which were selected as articles for publication in a journal

## Teaching

### CREATION AND DEVELOPMENT OF TEACHING PROVISION

2007	<b>Masters in "Biomaterials and Medical Devices"</b> (BiDiM) - graded A+ in 2010 Teaching programmes including <i>e-learning</i> , student support and guidance (TICE)
1997	<b>Bachelor degree Mechanical Engineering</b> by <i>distance learning</i> (National Centre for Distance Learning, Univ. of Bordeaux, Lille and Lyon)
1988 - 1998	Preparation for the Agrégation in Mechanics, national competitive examination
1987 - 1998	Preparation for the CAPET National Certificate for Technical teachers
1986	Mechanical Technology department (Undergraduate and Postgraduate)

### INNOVATION AND DEVELOPMENT

2019	Preparation of an international partnership with the Masters in "Biomaterials and Medical Devices" - Univ. of Gdansk (Po.) ?
2015	International Bachelor degree in Mechanical Engineering
2014	Project-based teaching in Mechanics and Biomechanics for postgraduate courses
2010	TICE - 1 course unit by <i>e-learning</i> , combining the skills of the eight French Centres of Clinical Investigation and Technological Innovation
2008	TICE - 1 joint course unit using <i>videoconferencing</i> with the Univ. Paris 13
2007	Review board for the BiDiM Masters course including representatives from relevant industries, doctors, surgeons and teacher-researchers
1997	Information and Communication Technologies used in teaching Individual student support, production of video courses in English

### INTERNATIONAL COOPERATION, TEACHING ABROAD

2017 ...	Visiting Professor Università Politecnica delle Marche of Ancona (It.) - Master's degree
2016 ...	Visiting Professor Politechnika Gdańska (Po.) - Bachelor and Master's degree
2003 - 2005	Joint Masters in Mechanics and Engineering with the Polytechnic Univ. of Bucharest (Ro.)
1998 ...	Coordination of international relations in the Department of Mechanics and Engineering International agreements and management of students and teachers' mobility - SOCRATES+ (Univ. Ancona, It., Univ. Aveiro and Univ. Faro, Pt...) and BCI-CREPUQ programs
1997 - 2001	2 TEMPUS Europe projects Introduction-extension of ECTS system then of Open and Distance Teaching

### COMMUNICATION

2014	1 invited lecture at an international conference: Multidisciplinary master's degree
2013	Joint organisation of a session of the French Congress of Mechanics Study into the effects of educational reforms in the Lycées on university courses
2008	1 invited lecture at an international conference: Open and Distance Learning
2003	1 national conference proceedings: Devising practical coursework in mechanics and biomechanics

### TEACHING AND SUPERVISION

Currently	Masters in Sciences, Technologies, Health: Fluid and solid mechanics, Systems Engineering Options in Research and Mechanical Engineering: Experimental characterization  Bachelor's Degree in Physics, Mechanical Engineering and Biology-Health: Solid mechanics Examining intensive courses for admission to <i>Grandes Ecoles</i> , Lycée Montaigne, Bordeaux
1997 - 2002	Distance learning in Mechanical Design
1990 - 2000	Engineering School - School of Advanced Industrial Technologies, Bayonne-64, Fr.
1987 - 1998	Training teachers in Mechanics and Mechanical Design

