



## University of Padua. PhD School Brain, Mind and Computer Science (BMCS)

The BMCS Doctoral Program is rigorous, highly creative, and deeply interdisciplinary. A small, selected group of students is admitted each year and trained by excellent professors, with different scientific backgrounds. Enrolled students have the opportunity to work in a stimulating environment, to use state-of-the-art equipment and to get in touch with a large network of top international research groups and laboratories located within universities and companies.

Some job domains are interdisciplinary in nature, requiring contribution from a variety of knowledge areas that are traditionally considered distant from each other. It is our vision that learning to work proficiently within these inter-disciplinary domains is a key vector of excellence and innovation, as well as a key condition to develop new skills that can be deployed professionally. We believe that these skills should be actively sought and strongly supported already as a part of research training.

The BMCS proposal arises from the collaboration between **applied cognitive science, neuroscience, computer science** and **social science**. The interdisciplinary capabilities resulting from this collaboration, even if still in its infancy, have already shown great potential in various areas of scientific research as well as in highly innovative and competitive production sectors. This is no surprise, indeed, as the areas of computer science, applied cognitive neuroscience, human-computer interaction have assumed a crucial role in the current international scene and in the foreseeable future.

**More info at:** <http://hit.psy.unipd.it/phd-bmcs>  
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**PhD program curricula.** Our doctoral students engage in research from the moment they enroll, and take courses whose subjects span across computer science, behavioural sciences, and social science.

The PhD program has two curricula:

### 1 - Neuroscience, Technology and Society

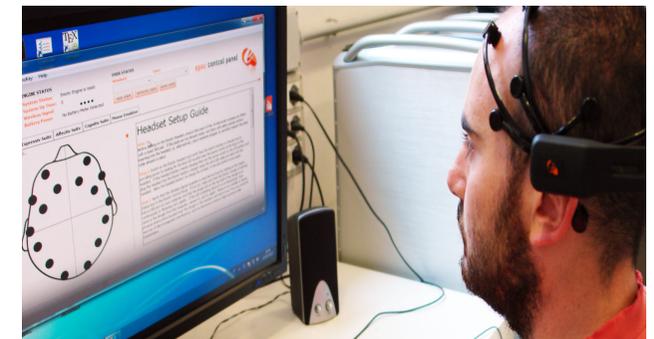
Students enrolled in this curriculum will undertake innovative research in applied cognitive science and neuroscience especially in relation with emerging and new technologies and with their impact on communities and society. Main research areas of this curriculum are: human-computer interaction, e-health, assistive and rehabilitative technologies for sensory/perceptual and cognitive disorders, cybertherapy and cyberpsychology, web sciences, neurotechnologies and symbiotic systems, persuasive technologies and a variety of topics under the smart city and smart communities umbrella.

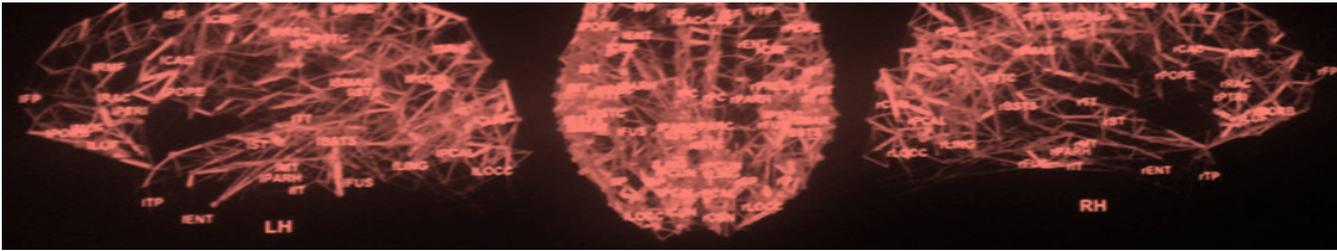
### 2 - Computer Science for Societal Challenges and Innovation

Students enrolled in this curriculum will look more specifically into computer science research seeking innovation and tackling societal challenges such as health issues, demographic change and well-being; secure, clean and efficient energy; smart, green and integrated transport; inclusive, innovative and reflective societies; secure societies - protecting freedom and security of countries and citizens, big data analysis for the smart cities

### Potential candidates

Students with background in Cognitive Science and Neuroscience, Computer Science, Computer Engineering, Psychology, Social Science, Telecommunication Engineering, Bioengineering, Automation Engineering, Clinical and Health Psychology are invited to contact us and submit their proposal. Highly motivated students with different backgrounds are also welcome.





**Training project** The BMCS doctoral program offers an inspiring, collaborative, and supportive training atmosphere for post-graduate study. PhD students with diverse backgrounds and interests are challenged to work together while at the same time pursuing their own project and specialization. Modern laboratories and facilities equipped with state-of-the-art research technology will host their activity. Key BMCS PhD courses and training is offered in the following areas.

**Programming languages:** including models and languages for concurrent, mobile, and distributed systems; techniques for static analysis and automatic verification of software systems.

**Artificial intelligence:** including machine learning; pattern recognition; neural networks and kernel methods; preference reasoning, knowledge representation, multi-agent systems, computational social choice.

**ICT Systems** including wireless networks; mobile applications; online games; privacy and security; user authentication; cloud computing; web technologies; social networks; semantic web.



**Brain and Cognitive Science:** including brain structure; human cognition; neural basis of attention, learning, memory, vision, audition and movement; sensation and perception; language; motor control, cyberpsychology; forensic neuroscience, cognitive ergonomics).

**Human-Computer interaction:** including interaction design; usability and user experience evaluation; information visualization; brain-computer interface & symbiotic systems; multimodal interaction; sensing and affective systems; human-robot interaction; mobile HCI; universal design.

**Research methods for behavioral science and user studies:** including eye tracking, virtual reality simulations; physiological measurements; computer assisted video-analysis; text and discourse analysis; questionnaire and interview; users log analysis, brainstorm and focus group; data analysis.

**Introduction to Social science:** including introduction to sociology, anthropology and social psychology; social ergonomics; computer mediated communication; on-line communities; ethics and privacy; organizational psychology, computer-supported cooperative work.

**Health and Clinical Psychology:** including clinical neuropsychology, neuro-rehabilitation, Cybertherapy, psychology of aging, advanced methods for neuro-rehabilitation, health psychology, clinical psychology, assisted living.

**Common skills for researchers:** including how to write for scientific publications; how to present scientific work to specialized and generic audiences; how to introduce a research activity to a company; introduction to entrepreneurship and building start-ups; how to write a scientific proposal to seek a grant; introduction to the European Research Program framework).

BMCS 博士学位课程是一个要求严格、具有高度创造性的多学科交叉课程。该课程每年只接收少数学生，并由来自不同领域的具有丰富经验的教授对学生进行培养。被录取的学生有机会在具有创新性的环境进行研究工作，并且能够使用最前沿的仪器设备，以及与在大学和知名企业中的国际顶级研究小组和实验室进行合作。

一些工作在本质上是具有高度综合性的，需要使用不同领域（在传统意义上这些领域是互不相干的）的知识才能完成。我们认为能够学会娴熟地从多学科的角度进行研究是创新的重要方向，同时跨学科研究为新技巧的获得提供了重要的条件。我们认为学生应该积极学会这些研究技巧，同时教会学生这些研究技巧是本课程的重要训练内容之一。BMCS 的研究计划来源于应用认知科学、神经科学、计算机科学和社会科学之间的合作。尽管这些学科之间的交叉合作还处于起步阶段，然而这些领域之间的合作在多个科学研究领域展示出高度的创新性和竞争性，具有很大的发展潜力。这无疑使得计算机科学、应用认知

更多信息：

<http://hit.psy.unipd.it/phd-bmcs>

中国申请者可从以下获得更多信息：

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