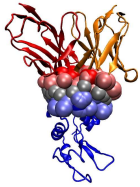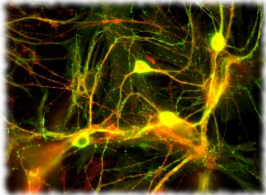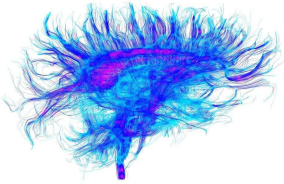Focused on recent discoveries concerning humans, from modeling biological and medical concepts to interpreting signals from various modalities
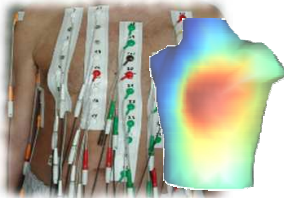
Antibody-antigen complex with interface atoms identified using a Voronoi diagram based calculation. (Courtesy INRIA)
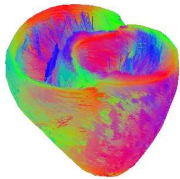
Fluorescence imaging of a network of hippocampal neurons in culture. (Courtesy IPMC)

Brain connectivity obtained through diffusion MRI. (Courtesy INRIA)

Body surface potential mapping: Sensors placements and information extractions for the risk stratification of myocardiac Infarction. (Courtesy UNS-I3S)

Statistical model of fibers in the heart (here the mean orientation) determined from 9 DTI images of canine hearts. (Courtesy INRIA)

Academic and research partners involved

Université Nice Sophia Antipolis

cnrs

Ínría Informatics mathematics

Université Nice SOPHIA ANTIPOLIS
Laboratoire J.A. Dieudonné

i3s sophia antipolis

ipmc

This program will be hosted by the Polytech'Nice-Sophia engineering school from University of Nice Sophia Antipolis. Located in Europe's largest scientific park, Sophia-Antipolis is on the French Riviera between Nice and Cannes.

POLYTECH°
NICE-SOPHIA

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Master 2 Informatique: Biologie, Informatique et Mathématiques (BIM)
Parcours de Biologie Computationnelle
Université de Nice Sophia Antipolis
http://www.polytech.unice.fr/CB

Head of M2 BIM: Francine Diener

Head of Computer Science Department: Jacques Farré
_____
Conception graphique: Pierre Kornprobst – 2010

Université Nice Sophia Antipolis

MASTER OF SCIENCE IN

COMPUTATIONAL BIOLOGY
AND **BIOMEDICINE**

Bioinformatics
Biomedical signal and image analysis
Modeling in neuroscience

A truly inter-disciplinary one-year learning experience

http://cbb.unice.fr

MASTER OF SCIENCE IN
COMPUTATIONAL BIOLOGY AND **BIOMEDICINE**

A truly inter-disciplinary learning experience

Today, in biology, medicine and related fields, scientists need to design algorithms and develop software to analyze complex data and hypotheses. The MSc in Computational Biology trains students to apply computer science, applied mathematics and statistical techniques to address biological and medical problems. This new program from University of Nice Sophia Antipolis is specially tailored for students interested in a truly interdisciplinary learning experience.

The scientific goal of this program is to focus on the human being from different perspectives (understanding and modeling functional aspects or interpreting biomedical signals for various devices) and at different scales (from the molecular to the organ and organism levels).

The aim of this program is to provide excellent academic or industrial career opportunities by offering high level coverage of modeling and computing principles that will enable the challenges to be met and make tomorrow's technological choices in biological, medical computing domains. To achieve this, classes will be given by outstanding professors and researchers from the research institutes in the campus: University of Nice Sophia Antipolis/CNRS (I3S, IPMC, LJAD, INLN) and INRIA.

A motivating environment

Sophia Antipolis is a wide scientific park of approximately 1.300 corporations and 30.000 jobs in R&D, mainly focusing on information technology, multimedia, medicine and bio-technologies. Within this park, the Polytech'Nice Sophia engineering school from University of Nice Sophia Antipolis, the multiple research institutes and laboratories are highly integrated and in harmony with the knowledge and the know-how on the site.

Teaching language: English

Located in the French Riviera, between Nice and Cannes

Master 2 (Master 1 to be completed at your home institution)

M2S1(30 ECTS)
» An intensive course will be proposed at the beginning of the program to help students learn the basics and main concepts in the mother disciplines (biology and mathematics)
» A 16 week course of half day lectures. 8 required courses will be complemented by 4 elective courses chosen from the MSc panel with the assistance of the coordinator to form a coherent plan of study.
» A project to specialize yourself.

M2S2 (30 ECTS)
» A 6 month paid fulltime internship in research lab or industry

Required courses list
Bioinformatics
» Algorithmic problems in computational structural biology: Understanding proteins and protein interactions, F. Cazals, INRIA.
» Discrete and differential models, software tools for biochemical networks, J.L. Gouze, INRIA.
Biomedical signal and image analysis
» Variational methods and geometric flows for brain imaging, R. Deriche INRIA.
» Deconvolution and denoising for confocal microscopy, J. Zerubia, INRIA.
» Digital signal processing for the analysis and modeling of electrophysiological records, O. Meste, UNS-I3S
» Computational anatomy and physiology of the human body, X. Pennec, INRIA.
Modeling in neuroscience
» Inverse problems in functional brain imaging, M. Clerc, INRIA.
» Neuron dynamics, B. Cessac, INRIA.

A rich network to start your career

You will have access to a wide network of contacts helping you to find the best opportunities for your internship, PhD or industrial position. Our professional network includes partners from other French or international academic institutions, but also industrial partners such as Galderma, General Electric, Leica, MXM, Philips, Sanofi-Aventis, Siemens, Sobios, Zeiss.

View of the French Riviera

Admission Criteria

The program is designed for those having completed the first-year MSc program at their home institution in either computer science, electrical engineering, applied mathematics, mathematical biology, bioinformatics or biophysics.

Procedure

Applications must be submitted through the MSc website where application and referee forms are available. There are two selection rounds. It is in the applicant's best interest to submit his/her application at the first round of applications to increase the chances of receiving a scholarship.

Tuition Fees

The French educational system allows all students to follow their studies with a low cost financial commitment. The cost of this program is based on regular French university fees which is approximately € 600. Tuition fees cover course expenses.

Scholarship

The scholarship program offers outstanding foreign students the chance to receive a grant for the first half of the program (M2S1). The second half (M2S2) will be funded by the employer (research lab or industry) for every student.

Housing

Several low cost University residences in Sophia Antipolis welcome students during the academic year. Antibes and Nice which are nearby cities also have accommodation possibilities.

Important dates

» November–April: First round of applications.
» Beginning of May : Notification of acceptance of the first round.
» May –June: Second round of applications.
» End of June: Notification of acceptance of the second round.

Most recent information available at:
http://cbb.unice.fr

Polytech'Nice-Sophia engineering school