

B I O I N F O R M A T I C S

Kristel Van Steen, PhD²

Montefiore Institute - Systems and Modeling

GIGA - Bioinformatics

ULg

kristel.vansteen@ulg.ac.be

Administration

<p>Contenus du cours</p> <p>Ce cours est une introduction au bioinformatics et peut inclure les matières suivantes : gestion de base de données et recherches de base de données des bioinformaticiens, statistiques pour le bioinformatics, alignement d'ordre, identification de modèle, phylogenetics, génétique statistique et analyse microarray</p>	<p>Course contents</p> <p>This course is an introduction to bioinformatics and may include the following topics : data base management and data base searches for bioinformaticians, statistics for bioinformatics, sequence alignment, pattern recognition, phylogenetics, statistical genetics and microarray analysis</p>
<p>Acquis d'apprentissage (objectifs d'apprentissage) du cours</p> <p>A la fin de ce cours, les étudiants auront un goût de différents domaines couverts par bioinformatics, de connaissance pratique au sujet des recherches de base de données, de l'alignement d'ordre, de la comparaison d'expression de gène et du genomewide screening.</p>	<p>Learning outcomes of the course</p> <p>At the end of this course, students will have a taste of different areas covered by bioinformatics, with practical knowledge about data base searches, sequence alignment, gene expression comparison and genomewide screening.</p>
<p>Prérequis et corequis / Modules de cours optionnels recommandés</p> <p>/</p>	<p>Prerequisites and co-requisites/ Recommended optional programme components</p> <p>/</p>
<p>Activités d'apprentissage prévues et méthodes d'enseignement</p> <p>Travail personnel par l'intermédiaire des tâches de lecture, homeworks et plus grands projets, à l'aide principalement des outils de Bioconductor dans le logiciel libre R.</p>	<p>Planned learning activities and teaching methods</p> <p>Personal work via reading assignments, homeworks and larger projects, mainly using Bioconductor tools in the free software R.</p>
<p>Mode d'enseignement (présentiel ; enseignement à distance)</p> <p>Mardi après-midi, entre 14h-18h (contrôle avec le corps enseignant), Institut Montefiore, premier</p>	<p>Mode of delivery (face-to-face ; distance-learning)</p> <p>Tuesday afternoon, between 14h-18h (check with teaching staff), Institut Montefiore, first semester.</p>

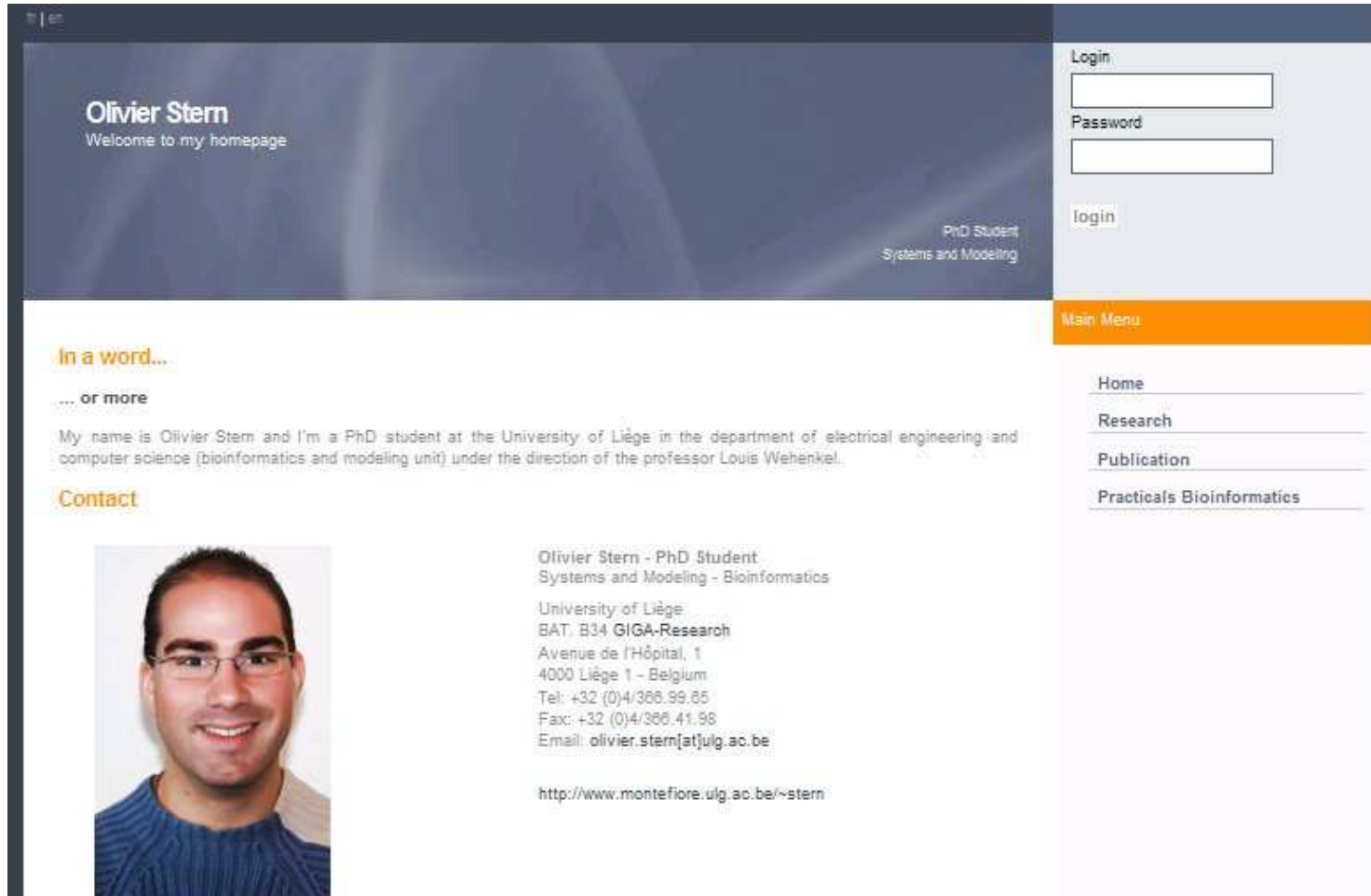
Workshops

Personal work via

- reading assignments,
- homeworks and
- one large final project

mainly using Bioconductor tools in the free software R.

Practicals and additional help (1) - GIGA



Olivier Stern
Welcome to my homepage

PhD Student
Systems and Modeling

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Password

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Main Menu

- Home
- Research
- Publication
- Practicals Bioinformatics

In a word...
... or more

My name is Olivier Stern and I'm a PhD student at the University of Liège in the department of electrical engineering and computer science (bioinformatics and modeling unit) under the direction of the professor Louis Wehenkel.

Contact



Olivier Stern - PhD Student
Systems and Modeling - Bioinformatics

University of Liège
BAT. B34 GIGA-Research
Avenue de l'Hôpital, 1
4000 Liège 1 - Belgium
Tel: +32 (0)4/386.99.65
Fax: +32 (0)4/386.41.98
Email: [olivier.stern\[at\]ulg.ac.be](mailto:olivier.stern[at]ulg.ac.be)

<http://www.montefiore.ulg.ac.be/~stern/>


(<http://www.montefiore.ulg.ac.be/~stern/>)

Practicals and additional help (1) – Montefiore

Personnel - Informations personnelles

Institut Montefiore
Département d'Electricité, Electronique et Informatique

Université de Liège

Présentation	Tom Cattaert	
<ul style="list-style-type: none"> ■ Accueil ■ Contacts ■ Localisation 	Bureau	B37 1.16
	Email	tom.cattaert@ulg.ac.be
Personnel	Numéro de téléphone	+32 4 366 9544
<ul style="list-style-type: none"> ■ Président du département ■ Académiques et scientifiques permanents ■ Personnel scientifique ■ Personnel administratif et technique ■ Liste complète ■ Les anciens 	Publications	Cliquez ici
Recherche	Unité de recherche	Systems and Modeling
<ul style="list-style-type: none"> ■ Unités de recherche 		
Enseignement		
<ul style="list-style-type: none"> ■ Programmes d'étude ■ Horaire des cours ■ Travaux de fin d'Études 		

(<http://www.montefiore.ulg.ac.be> → personnel scientifique)

Organization: tentative course layout

Room	Date	In Class Time	Course Topic
1.21 (B28)	20-sept	16-18	CH1: Bioinformatics - what it means and does not mean
1.21 (B28)	4-oct	16-18	Intro to R
1.21 (B28)	11-oct	16-18	CH2: A primer on genetics
1.21 (B28)	18-oct	16-18	CH3: Sequence analysis
1.21 (B28)	25-oct	14-16	CH3: Sequence analysis (continued)
		16-18	Sequence analysis in practice - HMW1 Assignment
1.21 (B28)	8-nov	14-16	CH4: Comparison of sequences
		16-18	Comparing sequences in practice - HMW2 Assignment
1.21 (B28)	15-nov	14-17.30	CH5: Genome-wide association analysis
		17.30-18.00	Genome-wide association analysis in practice - HMW3 assignment
1.21 (B28)	22-nov	14-18	CH6: A world of interactions
1.21 (B28)	29-nov	14-16	Data mining with Random Jungle - HMW4 assignment
		16-18	Opportunity to ask questions about the HMWs to the assistants
1.21 (B28)	6-déc	14-17	CH7: Family relationships - an advantage or disadvantage?
		17-18	Showcase of FAMMDR (no exam material)
TBA	TBA	14-16	GUEST SPEAKER: a case study
		16-18	Project assignment: combining HMW3-4

- Interested in a particular bioinformatics application?
- Let me know, and I can incorporate it as separate section of the course...

Organization

- The course will be interactive in English/French.
 - All course notes are in English.
 - Homeworks can be handed in in French.
 - Examination will be in French (or in English if requested for).

Passing the course successfully

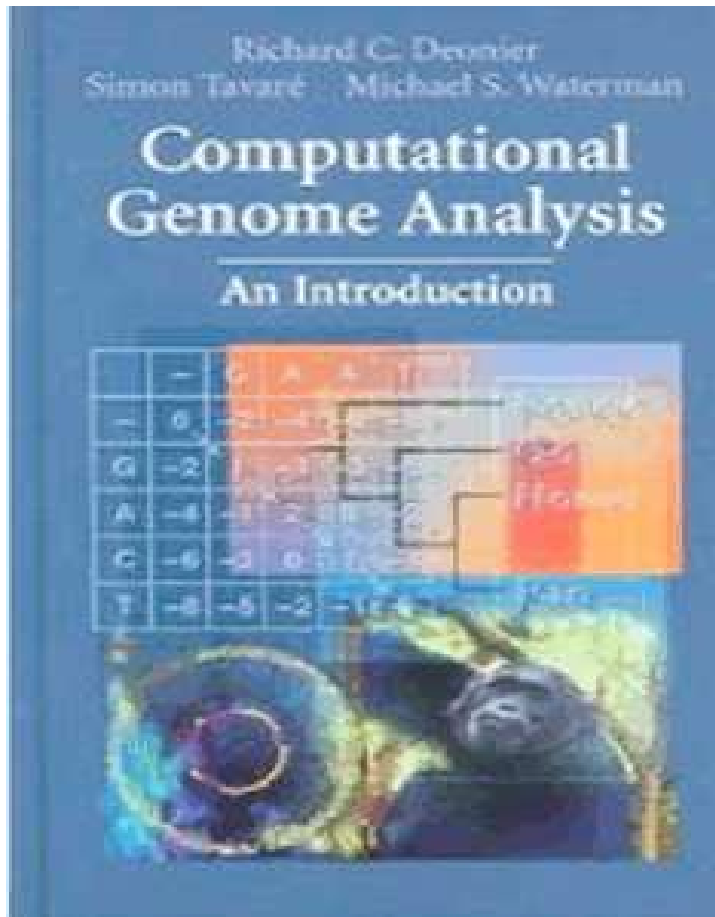
- You can obtain a maximum of 100 points
 - Written exam in French: maximum of 60 points
 - Multiple choice questions – closed book (discussable)
 - Practicals: maximum of 40 points (4 homeworks)
 - Homeworks are handed in electronically unless mentioned otherwise. You can choose the language
 - Homeworks 3 and 4 are actually part of a larger project and will have several components. A presentation presenting this homework can be part of a supporting oral exam (discussable)
- **When practicals are not handed in in time (without acceptable reason)
→ ZERO**

Course notes materials

- Main course book:
 - Richard C. Deonier, Simon Tavare & Michael S. Waterman:
Computational Genome Analysis – an Introduction, Springer 2005
 - Check with campus facilities for good rates
 - The book is recommended as complement to the course slides, but is not mandatory. It is a nice reference book
- Course slides are obtained via the course website at:

<http://www.montefiore.ulg.ac.be/~kvansteen/>

Motivation for course book



- Biological background (ch 1)
- Probability calculus (ch 2 and 3)
- Sequence alignment (ch 6)
- Rapid alignment methods; FASTA and BLAST (ch 7)
- Phylogenetic trees (ch 12)
- Expression data analysis (ch 11)

Good supporting books



Course website

www.montefiore.ulg.ac.be/~kvansteen

Kristel Van Steen, PhD²[Home](#)[List of Publications](#)[Curriculum Vitae Short](#)[Curriculum Vitae Long](#)[NEW - March 2011:](#)[Consultancy Charter](#)

Links to affiliations

- [ULg homepage](#)
- [Institut Montefiore](#)
- [Center for Medical Genetics Ghent \(at UG\)](#)
- [Center for Statistics \(at UHasselt\)](#)
- [Center for Human Genetics \(at K.U.Leuven\)](#)
- [Global Allergy and Asthma European Network](#)

Teaching 2011-2012

- [MATH0008-2 - Introduction to Probability and Statistics](#)

Contact Information

Dépt / Unité : Dép. d'électric., électron. et informat.
(Inst.Montefiore) / Bioinformatique

Mail Adresse : BAT. B28 Bioinformatique
Grande Traverse, 10
4000 Liège 1
Belgium

Office: 0.15 (BAT 37)
Tel: +32 4 366 2692

Email : Kristel.VanSteen@ulg.ac.be



Research Interests

Statistical Genetics

- Components analysis
- FBAT testing
- Gene-environment interactions
- Gene-gene interactions and interaction graphs
- Genetic heterogeneity
- Genetic imprinting
- Genome-wide association analysis
- Kinship and genomic background

Course notes materials

Teaching20102011.html

Bioinformatics Teaching 2011-2012

GBIO009-1: Bioinformatics

SOME PRACTICAL ARRANGEMENTS:

- When are the classes given?
 - [Complete Course Schedule](#) **September 15 (Updated !!!)**
- Where do the classes take place?
 - room 1.21 (B28) at the Montefiore
- How can I pass the exam?
 - All you need to know is right [here](#)
- What if I have questions?
 - Consult Kristel Van Steen (kristel.vansteen@ulg.ac.be) for any questions about theory or homeworks, preferably on
 - Tuesdays before/after class
 - **Wednesdays or Fridays (check availability)**
 - Consult Olivier Stern ([navigate via "Practicals Bioinformatics"](#)) or Tom Cattaert (tom.cattaert@ulg.ac.be) for additional information about or help with practicals.

CLASS MATERIAL (use [7-Zip](#) to unpack zipped files):

20 September 2011 : 4pm-6pm !!!

Questions?