Handbook 手册

Unit 单元

BMS5021 - Introduction to Bioinformatics

BMS5021 - 生物信息学导论

> ⚠ There is a more recent version of this academic item available.
>
> 该学术文章有更新的版本。

Faculty:

学院：

[Faculty of Medicine, Nursing and Health Sciences](#)

医学、护理和健康科学学院

Owning organisational unit:

所属组织单位：

School of Biomedical Sciences

生物医学科学学院

Study level:

学习水平：

Postgraduate

研究生

SCA band:

SCA 乐队：

SCA Band 2

SCA 乐队 2

EFTSL:

EFTSL：

0.125

Credit points:

学分：

6

Open to exchange or study abroad students?
Yes

是否招收交换生或留学生?
是的

Overview 概述

This unit will train students in the principles and practical approaches of computational biology algorithms for Bioinformatics analyses of data derived from genes and proteins.

本单元将对学生进行计算生物学算法的原理和实际方法的培训，以便对源自基因和蛋白质的数据进行生物信息学分析。

The unit will start by building solid foundational knowledge of the biology of the gene focusing on basic concepts of biological information stored in DNA and its translation to functional biomolecules.

本单元将首先构建基因生物学的扎实基础知识，重点讲解存储在 DNA 中的生物信息的基本概念及其转化为功能性生物分子的过程。

Students will learn to critically evaluate leading existing bioinformatics tools used to address biological questions.

学生将学习如何批判性地评估用于解决生物学问题的现有领先的生物信息学工具。

The unit completes the cycle of learning by asking students to apply this knowledge to the analysis of big datasets from biomedical and genomics experiments.

本单元要求学生运用这些知识分析来自生物医学和基因组学实验的大数据集，从而完成学习循环。

Offerings 供品

S1-01-CLAYTON-ON-CAMPUS S1-01-克莱顿校区

Location: Clayton 地点：克莱顿

Teaching period: First semester

Attendance mode: Teaching activities are on-campus (ON-CAMPUS)

S2-01-CLAYTON-ON-CAMPUS S2-01-克莱顿校区

Location: Clayton 地点：克莱顿

Teaching period: Second semester

Attendance mode: Teaching activities are on-campus (ON-CAMPUS)

Rules 规则

Enrolment Rule 入学规则

Must be enrolled in C6004 or M6003 or M6030 or M6036

必须选修 C6004、M6003、M6030 或 M6036 课程

Contacts   联系方式

Chief Examiner(s) 首席审查员

Associate Professor Peter Boag

彼得·博格副教授

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Offering(s):

- Applies to all offerings

Unit Coordinator(s) 单元协调员

Dr Ranjeeta Menon   兰吉塔·梅农博士

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电子邮件：Ranjeeta.Menon@monash.edu

Offering(s):

- Second semester, Clayton, Teaching activities are on-campus (ON-CAMPUS)

Associate Professor Peter Boag

彼得·博格副教授

Email: peter.boag@monash.edu

电子邮件：peter.boag@monash.edu

Offering(s):

- Applies to all offerings

Learning outcomes 学习成果

On successful completion of this unit, you should be able to:

成功完成本单元学习后，您应该能够：

1. Describe the relationships between DNA, RNA, and proteins and their roles in cell functioning.

   描述 DNA、RNA 和蛋白质之间的关系及其在细胞功能中的作用。

2. Explain the health data life cycle and the relevance of computation in modern life sciences research.

   解释健康数据生命周期以及计算在现代生命科学研究中的相关性。

3. Explain how nucleotide and protein sequence and structure data are represented and processed in computational biology.

   解释计算生物学中核苷酸和蛋白质序列及结构数据的表示和处理方式。

4. Evaluate the merits and limitations of the major bioinformatics databases to solve specific computational biomedical problems.

   评估主要生物信息学数据库在解决特定计算生物医学问题方面的优点和局限性。

5. Use bioinformatic tools and databases to analyse nucleotide or protein sequences.

   利用生物信息学工具和数据库分析核苷酸或蛋白质序列。

6. Perform elementary statistical analysis on biomolecular and "omics" datasets and represent the outcomes in informative graphical displays and data summaries.

   对生物分子和"组学"数据集进行基本统计分析，并将结果以信息丰富的图形显示和数据摘要的形式呈现。

Teaching approach 教学方法

Active learning 主动学习

For full details of the teaching approach to this unit, please refer to Moodle.

有关本单元教学方法的详细信息，请参阅 Moodle。

Assessment summary 评估总结

Assessment in this unit includes hurdle assessment tasks. Failure of any hurdle assessment task may result in failure of the unit.

本单元的考核包括阶段性考核任务。任何一项阶段性考核任务不及格都可能导致本单元考核不及格。

Assessment 评估

1 - MCQ and extended questions on biology of the gene

1 - 关于基因生物学的选择题和简答题

Value %: 30 数值百分比：30

2 - Oral presentation on bioinformatics algorithms and programs 2000 words

2 - 生物信息学算法和程序口头报告（2000字）

Value %: 30 数值百分比：35

3 - Data analysis - omics project - written report (2,000 words)

3 - 数据分析 - 组学项目 - 书面报告（2000字）

Value %:　40　数值百分比：35

Hurdle type:　Threshold

Hurdle description:
You must achieve a mark of 45% in this assessment task to achieve the hurdle.

Scheduled and non-scheduled teaching activities　　计划内和计划外的教学活动

Lectures　讲座

Total hours:　24 hours　总工时：24 小时

Offerings:

- Applies to all offerings

Workshops　研讨会

Total hours:　48 hours　总工时：48 小时

Offerings:

- Applies to all offerings

Workload requirements　工作量要求

Workload　工作量

Per week: 6 hours of direct learning + 6 hours of self-directed learning.

每周：6 小时直接学习 + 6 小时自主学习。

Learning resources　学习资源

Required resources 所需资源

See Moodle for details about required resources.

请查看 Moodle 了解所需资源的详细信息。

Census dates and teaching periods

Find teaching periods and related dates

Technology Requirements

Bring your own device (BYOD) specifications

Admissions and fees (Australia)

Find-a-course

Admissions, fees and timetable (Indonesia)

Course and study options

Admissions and fees (Malaysia)

Course and study options

Timetable information

Unit timetable information