

BL4210 Practical Skills for Molecular Biology and Biochemistry

(BL4210 online module handbook version 20)

Credits: 15

Semester: 1

Module Organiser

Dr Michael M Nevels

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01334 463375

Pre-requisite Modules:

Permission of biology
honours adviser required

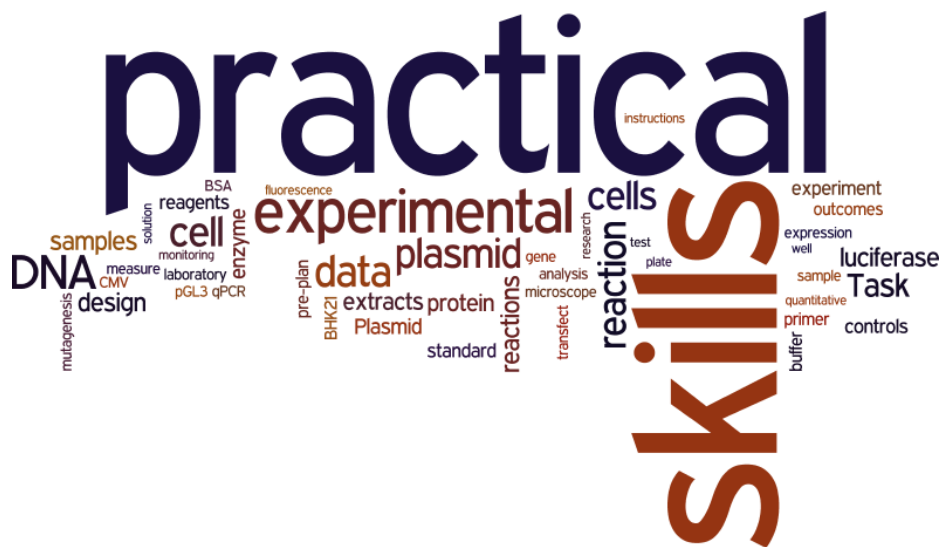
Anti-requisite Modules:

Post-requisite Modules:

Additional Module

Information:

Please [check MMS](#) regularly for additional module information



Practical skills are the core of research in biochemistry and molecular biology. This module is designed to prepare students for laboratory research projects in internationally competitive research. The module is designed to foster skills such as experimental design, core practical skills, data analysis and excellent record keeping. Each practical requires some prior theoretical familiarity. Emphasis is placed upon experimental design - notably anticipation of experimental outcomes and the choice of appropriate experimental controls. This planning phase is followed by execution of the experiment and analyses of the data.

[View the current Biology Online Module Catalogue for BL4210](#)

[BL4210View BL4210 \(2018/9\) in the University of St Andrews Module Catalogue](#)

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BL4210: Timetable

Legend (not all modules have every event type):

lecture	tutorial	workshop	practical	other
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Semester 1: Week 1

DATE & TIME	VENUE	STAFF	EVENT
Monday 17-09-2018 14:00 to 15:00	Biomolecular Sciences Building Seminar Room 1.13	Dr Michael M Nevels	Lecture L1: Introduction to Module qPCR & Mutagenesis Pre-Plan Advice <small>2018-9_BL4210_L1</small>
Thursday 20-09-2018 14:00 to 17:00	Bute Building Computer Classroom A21	Prof Malcolm White	Practical P1: Bioinformatics Practical <small>2018-9_BL4210_P1</small>
Friday 21-09-2018 14:00 to 17:00	Bute Building Computer Classroom A21	Prof Malcolm White	Practical P2: Bioinformatics Practical <small>2018-9_BL4210_P2</small>

Semester 1: Week 4

DATE & TIME	VENUE	STAFF	EVENT
Monday 08-10-2018 14:00 to 15:00	Biomolecular Sciences Building Seminar Room 1.13	Dr Michael M Nevels	Lecture L2: qPCR & Mutagenesis Pre-Plan Discussion Practical Advice <small>2018-9_BL4210_L2</small>
Tuesday 09-10-2018 10:00 to 17:00	Purdie Building Microbiology Teaching Laboratory 370	Dr Michael M Nevels Dr Christina Paulus	Practical P3: qPCR & Mutagenesis Practical <small>2018-9_BL4210_P3</small>
Thursday 11-10-2018 11:00 to 14:00	Purdie Building Microbiology Teaching Laboratory 370	Dr Michael M Nevels Dr Christina Paulus	Practical P4: qPCR & Mutagenesis Practical <small>2018-9_BL4210_P4</small>
Friday 12-10-2018 14:00 to 17:00	Purdie Building Lecture Theatre D	Dr Michael M Nevels Dr Christina Paulus	Practical P5: qPCR & Mutagenesis Class Data Collation Data Analysis Advice <small>2018-9_BL4210_P5</small>

Semester 1: Week 5

DATE & TIME	VENUE	STAFF	EVENT
Friday 19-10-2018 14:00 to 15:00	Biomedical Sciences Building Seminar Room 1.13	Dr Michael M Nevels	Lecture L3: Cell Transfection Pre-Plan Advice <small>2018-9_BL4210_L3</small>

Semester 1: Week 9

DATE & TIME	VENUE	STAFF	EVENT
Monday 12-11-2018 14:00 to 15:00	Biomolecular Sciences Building Seminar Room 1.13	Dr Michael M Nevels	Lecture L4: Cell Transfection Pre-Plan Discussion Practical Advice <small>2018-9_BL4210_L4</small>
Tuesday 13-11-2018 14:00 to 17:00	Purdie Building Microbiology Teaching Laboratory 370	Dr Michael M Nevels Dr Christina Paulus	Practical P6: Cell Transfection Practical <small>2018-9_BL4210_P6</small>
Thursday 15-11-2018 10:00 to 17:00	Purdie Building Microbiology Teaching Laboratory 370	Dr Michael M Nevels Dr Christina Paulus	Practical P7: Cell Transfection Practical <small>2018-9_BL4210_P7</small>
Friday 16-11-2018 14:00 to 17:00	Purdie Building Lecture Theatre D	Dr Michael M Nevels Dr Christina Paulus	Practical P8: Cell Transfection Class Data Collation Data Analysis Advice <small>2018-9_BL4210_P8</small>

BL4210: Reading List

[BL4210 Click for BL4210 reading list](#)

BL4210: Assessment

1-hour Written Examination = 30%, Coursework = 70%

Assessment:	qPCR & Mutagenesis Pre-plan
Due by:	28/09/2018 13:00
Feedback due by:	08/10/2018 13:00
Type:	Turnitin
Weight:	1%

Assessment:	qPCR & Mutagenesis Report
Due by:	22/10/2018 13:00
Feedback due by:	02/11/2018 13:00
Type:	Turnitin
Weight:	2%

Assessment:	Cell Transfection Pre-plan
Due by:	02/11/2018 13:00
Feedback due by:	12/11/2018 13:00
Type:	Turnitin
Weight:	2%

Assessment:	Cell Transfection Report
Due by:	26/11/2018 18:00
Feedback due by:	13/12/2018 18:00
Type:	Turnitin
Weight:	2%

(MMS assessment data cached: 25 April 2019
23:20:21.)

The following related information applies to all
Biology modules:

School of Biology Marking Criteria:

[See School of Biology Undergraduate Handbook](#)

Late submission of continuous assessment work:

All late submissions of coursework that do not require electronic submission should be made via the **late submissions box** in the Biomolecular Science Building (beside the Teaching Office)

Exam details:

[See School of Biology Undergraduate Handbook](#)

Exam timetable:

see
<http://www.st-andrews.ac.uk/students/academic/examinations/examtimetables/current/>

Expected attendance:

[See School of Biology Undergraduate Handbook](#) for detailed attendance requirements.

Good Academic Practice & Avoiding Academic Misconduct:

[See School of Biology Undergraduate Handbook](#)

University Student Handbook:

[University Student Handbook](#)

School and University regulations in the School and University Undergraduate Handbook relating to absence reporting, penalties and rules for late submission of work, extensions for coursework, return of coursework, S-coding, good academic practice and Academic Alerts.:

[School of Biology Undergraduate Handbook University Student Handbook](#)

Who to ask

(Information in this section applies to all Biology Modules)

Questions about different aspects of the module should be directed to different people:

Questions about

General teaching matters
Rescheduled or cancelled events
Lecture or practical content
Completing assessed practical assignments
Completing assessments

Marking on continuous assessment

Marking on exams

Rearranging practical days

Absence and/or extensions

Difficulties with academic progress which impact more than one module:

Overall performance, progress or future directions:

Disability:

For advice and support on any issue e.g. academic, financial, international, personal or health matters, or if you are unsure of who to go to for help:

University assistance with urgent matters out of office hours:

Contact

Biology Teaching Office (bioteach@st-andrews.ac.uk)

Check your University email

The lecturer who presented the material

The lecturer who set the assignment

Module Organiser (Dr Michael M Nevels mmn3@st-andrews.ac.uk)

The Demonstrator or Module Organiser (Dr Michael M Nevels mmn3@st-andrews.ac.uk)

Module Organiser (Dr Michael M Nevels mmn3@st-andrews.ac.uk)

[Grant Brown](#)

Module Organiser (Dr Michael M Nevels mmn3@st-andrews.ac.uk) **and** the Biology Teaching Office (bioteach@st-andrews.ac.uk)

Year Coordinator

See [School of Biology Undergraduate student handbook](#) for list:

<http://biology.st-andrews.ac.uk/documents/UndergraduateHandbook.pdf>

Advisor of Studies

Disability Coordinator (Dr Jacqueline Nairn jn37@st-andrews.ac.uk)

Advice & Support Centre

Address: 79 North Street, St Andrews

Email: theasc@st-andrews.ac.uk

Web: <https://www.standrews.ac.uk/ask-a-question/>

Tel: 01334 462020

Tel: 01334 476161

Web: <https://www.st-andrews.ac.uk/students/advice/counselling/incrisis/>

Biology Teaching Office:

We are happy to hear from you about teaching matters. The School of Biology Teaching Office is open Monday to Friday 09.00 - 13.00 and 14.00 - 17.00. School of Biology staff will respond to your emails during these hours. Our team will provide a response to you within three working days.

Biology Teaching Office, The Biology Hive, New Technology Centre, University of St Andrews, North Haugh, St Andrews, Fife KY16 9SR

Email: bioteach@st-andrews.ac.uk

Tel: 01334 463602/3566

BL4210: Contributing Staff



[Dr Michael M Nevels](#)
(Module Organiser)

Reader in Virology

mmn3@st-andrews.ac.uk



[Dr Michael M Nevels](#)
(Module Organiser)

Reader in Virology

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[Dr Christina Paulus](#)

Research Fellow

cp212@st-andrews.ac.uk



[Prof Malcolm White](#)

Professor

mfw2@st-andrews.ac.uk

BL4210: Learning Outcomes

Students completing module BL4210 successfully should be able to:

- Probe databases for relevant information and use bioinformatics tools in biochemistry and molecular biology research projects
- Design experimental protocols, incorporate appropriate negative/positive experimental controls and anticipate likely experimental outcomes
- Carry out key modern biochemistry and molecular biology experiments and create clear and complete research records
- Analyse and interpret experimental data, compare results and draw valid conclusions
- Write clear and logical scientific prose

BL4210: Acquired Skills

Practical Skills

- Biomolecule isolation/characterisation
- Buffers
- Database interrogation
- DNA isolation
- Enzyme assay
- Handling mammalian cells
- Handling microbes
- Image analysis
- Image processing
- Pipetting
- Polymerase Chain Reaction (PCR)
- Protein quantitation
- Transformation

Transferable Skills

- "Full" practical write-up (Intro, Methods, Results, Discussion)
- Critically evaluating sources/information
- Finding information on the web
- Referencing
- Searching databases
- Lab safety awareness
- Reflective analysis
- Calculations/equations
- Concentrations
- Data analysis
- Data analysis (depending on project)
- Data presentation
- Descriptive statistics
- Dilutions
- Distinguish different types of data
- Draw a line of best fit
- Linear regression
- Produce graphs/figures
- Produce tables
- SI units
- Use Excel
- Volumes
- Lab or field notebook
- Designing experiments
- Generate class dataset
- Working in pairs/small groups

Policies

(Information in this section applies to all Biology Modules)

- The procedures and regulations followed by the School of Biology are outlined in the [University Handbook](#) and in the [School of Biology Undergraduate Handbook](#) (<https://synergy.st-andrews.ac.uk/biocurrentstudent/files/2017/09/UndergraduateHandbook.pdf>).
- All coursework associated with the module must be completed and submitted by its due date.
- Specific School regulations relating to absence reporting, penalties and rules for late submission of work, extensions for coursework, return of coursework, S-coding, Good Academic Practice and Academic Alert are stated in the [School of Biology Undergraduate Handbook](#) and students are required to carefully read these regulations.
- Students are also referred to the University Handbook, available at: <http://www.st-andrews.ac.uk/studenthandbook/>