Programme Specification (Undergraduate) FOR ENTRY YEAR: 2023/24

Date created: 22/12/2022 **Last amended:** 22/12/2022 **Version no.** 1

1. Programme title(s) and code(s):

Natural Sciences (Life and Physical Sciences) BSc

Natural Sciences (Life and Physical Sciences) MSci

Natural Sciences (Life and Physical Sciences) DipHE*

Natural Sciences (Life and Physical Sciences) CertHE*

With optional Year in Industry or Year Abroad, which can only be transferred onto when in course

Notes

* An award marked with an asterisk is only available as an exit award and is not available for students to register onto.

a) HECOS Code

HECOS Code	%
[Insert HECOS Code]	[Insert %]
[Insert HECOS Code or delete row, as applicable]	[Insert % or delete row]
[Insert HECOS Code or delete row, as applicable]	[Insert % or delete row]
[Insert HECOS Code or delete row, as applicable]	[Insert % or delete row]

b) UCAS Code (where required)

FCG0

GFC0

2. Awarding body or institution:

University of Leicester

3. a) Mode of study

Full-time

b) Type of study

Campus-based

4. Registration periods:

BSc:

The normal period of registration is three years (four years for degrees ‘with a year in industry/abroad’)

The maximum period of registration five years (six years for degree ‘with a year in industry/abroad’)

MSci:

The normal period of registration is four years (five years for degrees 'with a year in industry/abroad')

The maximum period of registration six years (seven years for degree 'with a year in industry/abroad')

5. Typical entry requirements

A-levels: A*AA-AAB. Including two science subjects at A2. Two AS-levels considered in place of one A-level. General studies accepted.

EPQ with A-levels: AAB + EPQ at grade B.

Access to HE (Science): pass full diploma with a substantial number of credits at distinction in science subjects at Level 3.

European Baccalaureate: pass with 85% overall. At least one science must be offered.

International Baccalaureate: pass diploma with 36 points, including at least one Higher Level science at Level 5.

Cambridge Pre-U: D3/D3/D3 in principal subjects.

Other Qualifications: BTEC nationals, international, Irish Scottish, OU, and other qualifications welcomed (when accompanied by satisfactory English Language proficiency for international students).

Pass in the UoL STEM, Biological Sciences or Medicine Foundation Year

If no post-16 Maths qualification is held, students will be offered a pre-sessional Maths course.

For the aims, learning outcomes and application criteria for the GCSA Year Abroad please see https://le.ac.uk/study/undergraduates/courses/abroad

6. Accreditation of Prior Learning

APL will not be accepted for exemptions from individual modules, however may be considered for direct entry to year 2, on a case by case basis and subject to the general provisions of the University APL policy.

7. Programme aims

The programme aims to provide:

For the BSc:

- An applied understanding of the scientific method and its limits
- Laboratory experience and a basic aptitude in physical, chemical and biological laboratories
- A sound basic knowledge of IT and computing
- Competency in basic mathematics (numeracy, algebra, graphical analysis, elements of calculus, the use and abuse of statistics)
- High level professional and personal skills (presentation, written and oral communication, team work, time management)
- Detailed knowledge of one of the following sciences: physics, chemistry or biology
- Experience in the public understanding of science and the effects of science on society
- Ability to critically evaluate scientific publications
- Experience of aspects of current research in interdisciplinary areas of science
- Independent learning skills

In addition, for the MSci:

- Ability to undertake extended research in interdisciplinary areas of science
- Advanced knowledge of one of the following sciences: physics, chemistry, or biology

8. Reference points used to inform the programme specification

- QAA Benchmarking Statement
- Framework for Higher Education Qualifications (FHEQ)
- UK Quality Code for Higher Education
- University Education Strategy
- University Assessment Strategy
- University of Leicester Periodic Developmental Review Report
- External Examiners' reports (annual)
- United Nations Education for Sustainable Development Goals
- Student Destinations Data
- Discovery-Led and Discovery-Enabling Learning Strategy 2016-2020
- Draft Natural Sciences Society Accreditation Criteria

9. Programme Outcomes

Unless otherwise stated, programme outcomes apply to all awards specified in 1. Programme title(s).

a) Discipline specific knowledge and competencies

i) Mastery of an appropriate body of knowledge

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Recall of core information, model problems, experiments and techniques. Awareness of current issues in Science And for the MSci: Application of advanced-level discipline specific knowledge	Lectures, Specified Reading, Problem-based workshops Independent group discussion, Tutorials Lectures, guided independent study	Written examinations Reports and presentations Short answer question sets Written examinations, Reports

ii) Understanding and application of key concepts and techniques

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Application of basic concepts. Practical demonstration of experimental method and design. Use of IT. Competent use of standard laboratory equipment, knowledge of safety procedures, and applications. Professional skills. And for the MSci: Application of Agent-based modelling to complex systems	Lectures, Tutorials Laboratory supervision PBL Workshops Extended research project Seminars, guided independent study	Written examination Presentations Reports Laboratory Competency checklist Short answer question sets Project dissertation Report

iii) Critical analysis of key issues

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Critical appraisal of scientific literature Experimental design And for the MSci: Research design	Laboratory supervision Group problems Journal club Research project	Written examinations, Journal Club, Peer review element in Undergraduate Research journal Project progress summary and report

iv) Clear and concise presentation of material

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Presentation of scientific results Participation in scientific discussion	PBL Workshops Tutorials PT meetings Research lectures	Presentations Journal Club Project seminars Project Vivas

v) Critical appraisal of evidence with appropriate insight

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Critical appraisal of scientific literature Experimental design And for the MSci: Research design	Laboratory supervision Group problems Journal club Research project	Written examinations, Journal Club, Peer review element in Undergraduate Research journal Project progress summary and report

vi) Other discipline specific competencies

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Practical demonstration of experimental method. Use of standard equipment, knowledge of safety procedures, and applications. Professional skills.	Laboratory classes, Problem BL, Workshops, Peer review	Group coursework Laboratory competency checklist, Written examinations Assessed problems

b) Transferable skills

i) Oral communication

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Response to questioning Science presentations And for the MSci: Defence of research approach	Tutorials Group working observation Project seminars Workshops Journal club Research project	Presentation assessment Assessment of responses to questions Project Viva

ii) Written communication

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Ability to compile an appropriate CV Ability to communicate scientific concepts with clarity And for the MSci: Ability to communicate a significant body of research clearly and concisely	CV Support Session Skill workshops Tutorials Research project	Formative feedback on CV from PT Research lecture reports Assessed reports Project dissertations Project progress summary and report

iii) Information technology

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Use of standard IT packages Use of R and Python to to: perform basic data analysis; produce plots; produce scripts to perform a sequence of commands.	Computing Workshops Laboratory Sessions	Assessed tasks Reports

iv) Numeracy

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Use of analytical and graphical Methods	Mathematic seminar and workshops	Written examinations Short answer questions Experimental summaries Reports Project dissertations

v) Team working

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Organization, time management, Interpersonal communication	Group problem solving, problem-based learning Group projects	Group assessment (outcomes and oral questioning)

vi) Problem solving

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Ability to research and problem-solve novel applications	Lectures, PBL workshops, group work, Research projects	Short answer questions, Group assessments, project coursework and dissertation

vii) Information handling

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Information retrieval Analysis of data And for the MSci: Analysis of large, complex data sets	Problem-based workshops Laboratory classes Skills workshops Research project	Reports Experimental summaries Project progress summary and report

viii) Skills for lifelong learning

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Use of Study skills and demonstration of Independent learning And for the MSci: Demonstration of advanced research skills	PBL workshops, Research project	Project assessments Report Project coursework and dissertation

10. Progression points

This programme follows the standard Scheme of Progression set out in Senate Regulations – see the version of Senate Regulation 5 governing undergraduate programmes relevant to the year of entry.

In cases where a student has failed to meet a requirement to progress he or she will be required to withdraw from the course.

The following additional progression requirements for this programme have been approved:

- Progression to a discipline specialism will require a pass (over 40% in significant assessment elements (e.g. sections of examination, end of module coursework) associated with that discipline.
- The following additional progression requirements are requested for MSci and BSc year abroad routes, respectively (however, it should be noted that the progression criteria to integrated Masters programmes are currently being considered as part of the review of Senate Regulation 5; the expectation is the programme will adopt the standard regulations once they are approved.
- MSci students may not take any module assessments at attempt three; if MSci fail any credits at attempt 2 they will be transferred to the BSc (reg. 5.15)
- MSci progression criteria are as follows:
    - Year 2 CWA
        - 60%+ automatic
        - 55-60% at Teaching Committee discretion following interview and recommendation by Personal Tutor
    - Year 3 CWA
        - 55%
- The following progression criteria apply to BSc year abroad:
    - Year 2 CWA
        - 60% automatic
        - 55-60% at Teaching Committee discretion following interview and recommendation by Personal Tutor

11. Criteria for award and classification

This programme follows the standard scheme of undergraduate award and classification set out in Senate Regulations – see the version of *Senate Regulation 5 governing undergraduate programmes* relevant to the year of entry.

12. Special features

Interdisciplinary modules, ability to specialize in a chosen subject area at the end of year one, authentic assessment, embedded skills development, group problem solving, research/problem-based learning, science communication, Journal of Interdisciplinary Science Topics, opportunity for exchange with comparable programme at McMaster University.

13. Indications of programme quality

External examiner evaluations.

The programme will be subject to standard University of Leicester procedures for quality assessment, including Annual Development Review, Periodic Developmental Review, Quality Office review, liaison with College Academic Committee, and the programme will report to the department's Learning and Teaching Committee (L&T).

There will be systematic, regular evaluation by students registered with the programme, including anonymous evaluation of sessions and modules. A student representative will be invited to attend L&T committee meetings (for unreserved business only).

The programme's teaching staff will engage with University procedures for peer assessment of teaching and marking.

It should be noted that no competitor programmes are currently accredited, however, the UK Natural Sciences Network/Society is soon to launch a UK Natural Sciences Accreditation Scheme in conjunction with Science Council. The proposer of the Natural Sciences (Life and Physical Sciences) attended the 2016/7 meetings of the Network at which the scheme was discussed. It is expected that the new programme will meet all the criteria for Natural Sciences Accreditation.

14. External Examiner(s) reports

The details of the External Examiner(s) for this programme and the most recent External Examiners' reports for this programme can be found at exampapers@Leicester [log-in required]

4/Year 1	**2023/24**	
5/Year 2	**2024/25**	
Level 6/Year 3	**2025/26**	120 credits in total
Level 7/Year 4	**2026/27**	120 credits in total

15. Appendix 1: Programme structure (programme regulations)

The University regularly reviews its programmes and modules to ensure that they reflect the current status of the discipline and offer the best learning experience to students. On occasion, it may be necessary to alter particular aspects of a course or module.

Natural Sciences (Life and Physical Sciences) BSc/MSci

Students will study a core Natural Sciences first year of problem-based interdisciplinary modules and skills modules. In their second year students will be able to select a specialisation route in either Molecular and Cellular Biology, Organismal Biology, Physics or Chemistry, studying 60 credits from their desired discipline in years 2 and 3 and focusing on this area in their final year project. Alongside this they will continue to study interdisciplinary NS modules which expose them to

areas where their chosen research discipline interfaces with the other sciences. Students that are registered for an MSci will study their first three years as described above with an additional fourth year consisting of a 60 credit project in their chosen specialism, a 15 credit Natural Sciences core taught module and 45 credits of taught modules from their chosen specialism.

Updates to the programme

Year affected	Module code	Change
2025/26	NT3300	New Sustainability Project. Students must choose 1 from 2 Project options.

c) Level 4/Year 1 2023/24

ix) Credit breakdown

Status	**Year long**	**Semester 1**	**Semester 2**
Core	45 credits	30 credits	45 credits
Optional	n/a	n/a	n/a

120 credits in total

x) Core modules

Delivery period	**Code**	**Title**	**Credits**
Sem 1	NT1008	Principles of Science: Bonds, Molecules and Cells	30 credits
Sem 2	NT1003	Networks and Circuits	15 credits
Sem 2	NT1004	Biophysics, Physiology and Metabolism	15 credits
Sem 2	NT1007	Science, Society and Sustainability	15 credits

Year long	NT1005	Laboratory, Computing and Scientific Skills I	30 credits
Year long	NT1006	Mathematics for Science	15 credits

Notes
N/A

d) Level 5/Year 2 2024/25

xi) Credit breakdown

Status	**Year long**	**Semester 1**	**Semester 2**
Core	30 credits	15 credits	15 credits
Optional	n/a	30 credits	30 credits

120 credits in total

xii) Core modules

Delivery period	**Code**	**Title**	**Credits**
Sem 1	NT2001	Astrophysics, Astrochemistry and Astrobiology	15 credits
Sem 2	NT2002	Evolution	15 credits
Year long	NT2003	Laboratory, Mathematical and Scientific Skills II	30 credits

Notes
N/A

xiii) Option modules from specialisms

Delivery period	**Code**	**Specialism**	**Title**	**Credits**

Semester 1	NT2004	Molecular and Cellular Biology	The Molecules of Life – An Introduction to Biochemistry and Molecular Biology	30 credits
Semester 2	NT2005	Molecular and Cellular Biology	Physiology, Pharmacology and Neuroscience	30 credits
Semester 1	NT2004	Ecological and Zoological Science	The Molecules of Life – An Introduction to Biochemistry and Molecular Biology	30 credits
Semester 2	NT2006	Ecological and Zoological Science	Genetics, Biodiversity and Behaviour	30 credits
Year long	NT2007	Chemistry	Introductory Analytical and Physical Chemistry	30 credits
Year long	NT2008	Chemistry	Introductory Organic and Inorganic Chemistry	30 credits
Semester 1	NT2009	Physics	Mechanics, Electricity and Magnetism	30 credits
Semester 2	NT2010	Physics	Light and Matter, Waves and Quanta	30 credits

Students must choose one specialism and take both of the modules for that specialism. Once students choose their specialism for Year 2, they must remain on that specialism for the remainder of their studies. This is an indicative list of option modules and not definitive of what will be available. Option module choice is also subject to availability, timetabling, student number restrictions and, where appropriate, students having taken appropriate pre-requisite modules.

e) Level 6/Year 3 2025/26

xiv) Credit breakdown

Status	**Year long**	**Semester 1**	**Semester 2**
Core	45 credits	15 credits	n/a
Optional	n/a	30 credits	30 credits

120 credits in total

xv) Core modules

Delivery period	Code	Title	Credits
Sem 1	NT3002	Molecular Analysis and Design	15 credits
Year long	NT3003	Interdisciplinary Research Journal	15 credits
Year long	NT3001	Research Project III	30 credits
Year long	NT3300	Sustainability Project	30 credits

Notes

Students choose ONE project type from the above two shaded options.

xvi) Option modules from specialisms

Delivery period	Code	Specialism	Title	Credits
Semester 1	NT3004	Molecular and Cellular Biology	Molecular Cell Biology and Genomes	30 credits
Semester 2	NT3005	Molecular and Cellular Biology	Bioinformatics and From Genes to Proteins	30 credits
Semester 1	NT3006	Ecological and Zoological Science	Genomes, Global Change and Conservation	30 credits

Delivery period	Code	Specialism	Title	Credits

Semester 2	NT3007	Ecological and Zoological Science	Neurobiology, Animal Behaviour and Evolution in the Field	30 credits
Year long	NT3008	Chemistry	Spectroscopy and Physical Chemistry	30 credits
Year long	NT3009	Chemistry	Organic and Inorganic Chemistry	30 credits
Semester 1	NT3010	Physics	Electromagnetic Fields and Relativity, Quantum Physics and Particles	30 credits
Semester 2	NT3011	Physics	Condensed Matter and Statistical Physics	30 credits

Students must choose one specialism and take both of the modules for that specialism. Once students choose their specialism for Year 2, they must remain on that specialism for the remainder of their studies. This is an indicative list of option modules and not definitive of what will be available. Option module choice is also subject to availability, timetabling, student number restrictions and, where appropriate, students having taken appropriate pre-requisite modules.

f) Level 7/Year 4 2026/27

xvii) Credit breakdown

Status	Year long	Semester 1	Semester 2
Core	75 credits	n/a	n/a
Optional	n/a	30 credits	15 credits

120 credits in total

xviii) Core modules

Delivery period	Code	Title	Credits
Year long	NT4001	Research Project IV	60 credits
Year long	NT4002	Modelling of Complex Systems	15 credits

Notes
N/A

xix) Option modules from specialisms

Delivery period	Code	Specialism	Title	Credits
Semester 1	NT4003	Molecular and Cellular Biology	Genetics: Evolution and Gene Expression	30 credits
Semester 2	NT4004	Molecular and Cellular Biology	Cancer Cell and Molecular Biology	15 credits
Semester 1	NT4005	Ecological and Zoological Science	Evolutionary Genetics and Neurobiology	30 credits
Semester 2	NT4006	Ecological and Zoological Science	Molecular Ecology and Evolution	15 credits
Semester 2	NT4015	Ecological and Zoological Science	Behavioural Ecology	15 credits
Semester 1	NT4007	Chemistry	Advanced Organic and Inorganic Chemistry	30 credits
Semester 2	NT4008	Chemistry	Advanced Physical Chemistry	15 credits
Year long	NT4009	Physics	Quantum Mechanics and Radiation and Matter	30 credits
Semester 1	NT4011	Physics	Astrodynamics	15 credits
Semester 1	NT4012	Physics	Electronics	15 credits
Semester 1	NT4013	Physics	Python	15 credits

Semester 1	NT4014	Physics	Numerical Programming in C	15 credits

Notes

Students must choose one specialism and take both of the modules for that specialism (or in the case of Ecological and Zoological Science, NT4005 PLUS NT4006 OR NT4015, and for Physics, NT4009 PLUS NT4011 OR NT4012 OR NT4013 OR NT4014). Once students choose their specialism for Year 2, they must remain on that specialism for the remainder of their studies. This is an indicative list of option modules and not definitive of what will be available. Option module choice is also subject to availability, timetabling, student number restrictions and, where appropriate, students having taken appropriate pre-requisite modules.

16. Appendix 2: Module specifications

See undergraduate module specification database [login required] (Note - modules are organized by year of delivery).

Appendix 3: Skills matrix