Programme Specification (Undergraduate)

FOR ENTRY YEAR: 2020/21

Date amended: 01/11/2019

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

a) STEM Foundation Year

The STEM Foundation Year programme provides progression onto BSc / Integrated Masters degrees in Chemistry, Engineering, Geography, Geology, Informatics, Mathematics, Natural Sciences, and Physics and Astronomy. It is not available as a stand-alone award.

HECOS Code

HECOS CODE	%
100390	100

b) UCAS Code (*where required*)

Natural Sciences with foundation year	FCC9
Geography with foundation year	F849
Geology with foundation year	F669
Chemistry with foundation year	F199
Engineering with foundation year	H199
Physics with foundation year	F399
Mathematics with foundation year	G199
Informatics with foundation year	G499

2. Awarding body or institution:

University of Leicester

3. a) Mode of study:

Full-time

b) **Type of study:**

Campus-Based

4. Registration periods:

The STEM Foundation Year will count towards the normal and maximum registration period of the degree programme that a student may progress to.

The normal period of registration for the STEM Foundation Year is one year (progressing to a 3 or 4 year UG degree).

The maximum period of registration for the STEM Foundation Year is 2 years.

5. Typical entry requirements:

A-level: BCC/CCC or points equivalent from best three A-levels, to include appropriate subject(s).

BTEC Diploma: DDM in an appropriate scientific or engineering discipline.

Access to HE courses in Science and Engineering: 45 L3 credits, including 24 at Distinction.

The STEM Foundation Year is designed to provide a route to higher education for applicants who do not have the right entry requirements for first year entry of the undergraduate programmes.

6. Accreditation of Prior Learning:

Not applicable

7. Programme aims:

The programme aims to:

- Develop the professional attributes and study skills that will equip students to thrive in a undergraduate degree programme and beyond
- Enable students to progress to an appropriate undergraduate programme through the acquisition of discipline specific knowledge at the required standard

8. Reference points used to inform the programme specification:

- UK Quality Code for Higher Education
- University Learning Strategy
- University Assessment Strategy
- University Transferable Skills Framework
- Specification documents for various A-level mathematics qualifications
- Specification documents for various A-level science (Physics, Chemistry, Biology, Geography, Geology, Computer Science) qualifications
- Programme (and module) specifications from the following courses to which this foundation year provides progression

9. Programme Outcomes:

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(a) Discipline specific knowledge and competencies		
(i) Mastery of an appropriate body of knowledge		
Students should have knowledge of mathematics and science to the appropriate A level syllabus	• Course texts and other specially prepared resources • Lectures, problem-solving classes • Group work/peer learning. • Regular coursework • Small group tutorials	• Online core-learning exercises • Coursework assessments • Scientific/technical writing assessments • End of semester examinations
(ii) Understanding and application of key concepts and techniques		
Students should be able to apply science and mathematical knowledge to specific scenarios	• Course texts and other specially prepared resources • Lectures, problem-solving classes • Group work/peer learning • Regular coursework • Small group tutorials	• Online core-learning exercises • Coursework assessments • Scientific/technical writing assessments • End of semester examinations

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(iii) Critical analysis of key issues		
Students should be able to: • explain the process of scientific enquiry, the roles of experiment and theory, and the limits of science • evaluate the reliability of information retrieved from electronic resources	• Induction sessions • Resource based learning • Group work/peer learning • Skills sessions	• Academic Portfolio Project • Experimental/project work • Scientific/technical writing assessments
(iv) Clear and concise presentation of material		
Students should be able to communicate scientific ideas through written material and oral presentations	• Course texts and other specially prepared resources • Lectures, seminars, problem-solving classes • Small group tutorials • Skills sessions • Formative feedback on presentation and reports	• Scientific/technical writing assessments • Academic Portfolio Project • Academic Portfolio Presentation
(v) Critical appraisal of evidence with appropriate insight		
Students should be able to: • distinguish between precision and accuracy, and explain the role of experimental error in the scientific process • evaluate the reliability of data and appreciate associated errors and uncertainties	Embedded throughout the programme in: • Course texts and other specially prepared resources • Lectures, seminars, problem-solving classes • Group work/peer learning • Small group tutorials • Experimental/project work	• Experimental/project work • Scientific/technical writing assessments • Academic Portfolio Project
(vi) Other discipline specific competencies		
Students should be able to: • use mathematical models to explain various features of scientific phenomena • use mathematics as an integral part of the scientific process • develop observational and descriptive skills in the sciences	Embedded throughout the programme in: • Course texts and other specially prepared resources • Lectures, seminars, problem-solving classes • Group work/peer learning • Small group tutorials • Experimental/project work • Regular coursework	• Online core-learning exercises • Coursework assessments • Experimental/project work • Scientific/technical writing assessments • End of semester examinations

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(b) Transferable skills		
(i) Oral communication		
Students should be able to verbally communicate mathematical and scientific ideas at an appropriate level	• Course texts and other specially prepared resources. • Lectures, seminars, problem-solving classes. • Group work/peer learning. • Small group tutorials with formative feedback • Skill sessions	• Small group tutorials • Problem-solving classes • Academic Portfolio Presentation
(ii) Written communication		
Students should be able to clearly communicate mathematical and scientific ideas in written form	• Course texts and other specially prepared resources • Lectures, seminars, problem-solving classes • Group work/peer learning • Small group tutorials with formative feedback • Skill sessions	• Small group tutorials • Problem-solving classes • Scientific/technical writing assessments • Academic Portfolio Project • End of semester examinations
(iii) Information technology		
Students should be able to • use electronic resources to find information • critically evaluate any retrieved information • use IT resources to process data • use IT to present information and data	• Course texts and other specially prepared resources • Lectures, seminars, problem-solving classes • Group work/peer learning • Small group tutorials with formative feedback • Skill sessions	• Scientific/technical writing assessments • Academic Portfolio Project • Academic Portfolio Presentation
(iv) Numeracy		
Students should be able to apply core mathematical techniques to solve numerical problems and analyse data	• Course texts and other specially prepared resources • Lectures, seminars, problem-solving classes • Group work/peer learning • Small group tutorials with formative feedback • Regular coursework	• Online core-learning exercises • Coursework assessments • Experimental/project work • Scientific/technical writing assessments • End of semester examinations

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(v) Team working		
Students should be able to work in groups to solve mathematical and scientific problems	• Seminars and problem-solving classes • Group work/peer learning • Small group tutorials • Experimental/project work with formative feedback • Skill sessions	• Seminars and problem-solving classes. • Experimental/project work
(vi) Problem solving		
To apply scientific and mathematical knowledge to a wide variety of problems	• Course texts and other specially prepared resources • Lectures, seminars, problem-solving classes • Group work/peer learning • Small group tutorials	• Online core-learning exercises • Coursework assessments • Scientific/technical writing assessments • Experimental/project work • End of semester examinations
(vii) Information handling		
Students should be able to correctly analyse and present scientific information and draw appropriate conclusions	• Course texts and other specially prepared resources • Lectures, seminars, problem-solving classes • Small group tutorials • Skills sessions	• Online core-learning exercises • Coursework assessments • Experimental/project work • Scientific/technical writing assessments • End of semester examinations
(viii) Skills for lifelong learning		
Students should be able to • make and organise an ordered set of course and revision notes • organise their time effectively • record and reflect on their learning experiences • assimilate and draw accurate conclusions from a wide variety of data and other resources • effectively communicate scientific conclusions in both written and oral form	• Course texts and other specially prepared resources • Lectures, seminars, problem-solving classes • Small group tutorials • Group work/peer learning • Experimental/project work • Skills sessions	• Online core-learning exercises • Scientific/technical writing assessments • Coursework assessments • Experimental/project work • End of semester examinations • Academic Portfolio Project • Academic Portfolio Presentation

10. Progression points:

The following additional award requirements for this programme have been approved.

Progression from Year 0 to Year 1:

Students will be required to pass **all** Foundation Year modules.

Resits will be offered for all modules except for the following modules:

- FS0023 Laboratory Skills
- FS0050 Academic Portfolio Project
- CH0062 Introductory Chemistry Practical

Reassessment will ordinarily be offered on one occasion only. However, certain coursework assessment components are not-resittable, as detailed in the module specification documents.

For students intending to study degrees in **Geography, Geology, Informatics, or the Natural Sciences** there are **no other** additional progression requirements.

For students intending to study degrees **in Engineering, Mathematics, or Physics and Astronomy**, there is the additional progression requirement to pass the examination component of both FS0031 Mathematics 1 and FS0032 Mathematics 2 (see Appendix 3: Progression Table).

For students intending to study degrees in **Chemistry** the additional progression requirements are:

- Module CH0062 requires at least 75% completion of the lab sessions
- Module FS0031 Mathematics 1 requires a mark of at least 40% in the final exam

Where a student fails to meet the progression requirement to obtain 40% in the examination component of a mathematics module (FS0031 and/or FS0032), a resit of the examination will be offered even if the module has been passed.

In cases where a student has failed to meet a requirement to progress he or she will be required to withdraw from the course. However, a student who passes 120 credits, but fails to meet the additional modular school progression requirements after reassessment, may be offered a transfer to another course with lesser progression requirements.

11. Special features:

Not applicable

12. Indications of programme quality

The teaching methodology for STEM foundation year programme has been informed from established foundation year programmes within the university.

13. External Examiner(s) reports

Not applicable.

Undergraduate Programme Specification

Appendix 1: Programme structure (programme regulations)

Stream 1: Geography, Geology and Natural Sciences

	Code	Title	Credits
Semester 1			
	FS0031	Mathematics 1	15
	FS0043	Waves and Matter	15
Semester 2			
	GY0011	Principles of Earth Science and Earth Systems	15
	NT0001	Principles of Biological Sciences	15
Year Long	FS0033	Introductory Data Analysis	15
	FS0050	Academic Portfolio Project	15
	CH0061	Introduction to Chemistry	30
		Total Credits	**120**

Stream 2: Chemistry

	Code	Title	Credits
Semester 1			
	FS0031	Mathematics 1	15
	FS0043	Waves and Matter	15
Semester 2			
	GY0011 *OR* NT0001	Principles of Earth Science and Earth Systems *OR* Principles of Biological Sciences	15
	CH0062	Introductory Chemistry Practical	15
Year Long	FS0033	Introductory Data Analysis	15
	FS0050	Academic Portfolio Project	15
	CH0061	Introduction to Chemistry	30
		Total Credits	**120**

Stream 3: Engineering and Physics & Astronomy

	Code	Title	Credits
Semester 1			
	FS0031	Mathematics 1	15
	FS0041	Mechanics 1	15
	FS0043	Waves and Matter	15
Semester 2			
	FS0032	Mathematics 2	15
	FS0042	Mechanics 2	15
	FS0044	Electromagnetism and Quantum Physics	15
Year Long	FS0023	Laboratory Skills	15
	FS0050	Academic Portfolio Project	15
		Total Credits	**120**

Stream 4: Mathematics

	Code	Title	Credits
Semester 1			
	FS0031	Mathematics 1	15
	FS0041	Mechanics 1	15
	CO0004	Creating Software Applications	15
Semester 2			
	FS0032	Mathematics 2	15
	FS0042	Mechanics 2	15
	CO0005	Introduction to Programming	15
Year Long	FS0033	Introductory Data Analysis	15
	FS0050	Academic Portfolio Project	15
		Total Credits	**120**

Stream 5: Informatics

	Code	Title	Credits
Semester 1			
	FS0031	Mathematics 1	15
	FS0041	Mechanics 1	15
	CO0004	Creating Software Applications	15
Semester 2			
	GY0011	Principles of Earth Science and Earth Systems	15
	NT0001	Principles of Biological Sciences	15
	CO0005	Introduction to Programming	15
Year Long	FS0033	Introductory Data Analysis	15
	FS0050	Academic Portfolio Project	15
		Total Credits	**120**

Undergraduate Programme Specification

Appendix 2: Module specifications

See module specification database

Appendix 3: Progression Table

To progress onto Year 1, students are required to pass **all** Foundation Year modules.

Some degree programmes have additional requirements (below) as explained in section 10.

Degree Programme	Additional Progression Requirements
Chemistry *BSc with Foundation Year*	In addition to passing FS0031 with a module mark of at least 40%, a mark of at least 40% must be obtained in the FS0031 exam. In addition to passing CH0062 with a module mark of at least 40%, a student must complete 75% of the laboratory sessions and associated write-ups.
Computer Science *BSc with Foundation Year*	None
Engineering *BEng with Foundation Year*	In addition to passing FS0031 and FS0032 with a module mark of at least 40%, a mark of at least 40% must be obtained in each of the FS0031 and FS0032 exams.
Geography *BSc with Foundation Year*	None
Geology *BSc with Foundation Year*	None
Mathematics *BSc with Foundation Year*	In addition to passing FS0031 and FS0032 with a module mark of at least 40%, a mark of at least 40% must be obtained in each of the FS0031 and FS0032 exams.
Natural Sciences *BSc with Foundation Year*	None
Physics and Astronomy *BSc with Foundation Year*	In addition to passing FS0031 and FS0032 with a module mark of at least 40%, a mark of at least 40% must be obtained in each of the FS0031 and FS0032 exams.

Undergraduate Programme Specification

Appendix 4: Skills matrix

Programme Learning Outcomes	FS0041 Mechanics 1	FS0042 Mechanics 2	FS0043 Waves & Matter	FS0044 EM & Quatum Physics	FS0031 Mathematics 1	FS0032 Mathematics 1	FS0023 Laboratory Skills	FS0050 Academic Portfolio Project	FS0033 Introductory Data Analysis	CO0001 Creating Software Applications	CO0002 Introduction to porgramming	CH0061 Introduction to Chemistry	CH0062 Introductory Chemistry Practical	NT0001 Principles of Biological Science	GY0011 Principles of Earth Science & Systems
(a) Discipline specific knowledge and competencies															
(vi) Other discipline specific competencies															
Students should be able to use mathematical models to explain various features of scientific phenomena	x	x	x	x	x	x	x	x	x			x	x	x	x
Students should be able to view mathematics as an integral part of scientific method	x	x	x	x	x	x	x	x	x			x	x	x	x
Students should be able to develop observational and descriptive skills in the sciences							x	x	x	x	x	x	x	x	x
(ii) Written communication															
Students should be able to clearly communicate mathematical and scientific ideas in written form	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
(iii) Information technology															
Students should be able to use electronic resources to find information	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Students should be able to critically evaluate any retrieved information	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Students should be able to use IT resources to process data								x	x						
Students should be able to use IT to present information and data								x	x					x	x
(iv) Numeracy															
Students should have mastery of specific elements of science and mathematics at AS and A level standard	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
(v) Team working															
Students should be able to work in groups to solve mathematical and scientific problems	x	x	x	x	x	x		x	x			x	x	x	x
(vi) Problem solving															
To apply scientific and mathematical knowledge to a wide variety of problems	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
(vii) Information handling															
Students should be able to correctly analyse and present scientific information and draw appropriate conclusions	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
(viii) Skills for lifelong learning															
Students should be able to make and organise an ordered set of course and revision notes	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Students should be able to organise their time effectively	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Students should be able to record and reflect on their learning experiences								x							
Students should be able to assimilate and draw accurate conclusions from a wide variety of data and other resources	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Students should be able to effectively communicate scientific conclusions in both written and oral form	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x