



The University of
Nottingham

UNITED KINGDOM • CHINA • MALAYSIA

School of Biosciences

Food Science

Course Handbook

2016-2017

Please note that all of the information given in this Student Course Handbook was correct at the time of going to press; Schools reserve the right to amend course structures or information and amend, substitute or withdraw modules detailed in this publication. Comments or feedback on the contents of this handbook are welcome, and will be used in the revised edition for 2017-2018. Any comments concerning this publication should be addressed to Kathy Wilson (Programme Manager) at the Sutton Bonington Campus or e-mail Kathy.Wilson@Nottingham.ac.uk.

This handbook is available in alternative formats. Please contact Kathy Wilson by emailing Kathy.Wilson@Nottingham.ac.uk or the Student Services Centre at the Sutton Bonington Campus to request an alternative format.

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1 Dates for Your Diary

Term dates

Autumn Term

Monday 26 September 2016 – Friday 16 December 2016

Spring Term

Monday 16 January 2017 – Friday 7 April 2017

Summer Term

Monday 8 May 2017 – Friday 23 June 2017

Semester dates

Autumn Semester

Monday 26 September 2016 – Saturday 28 January 2017

Spring Semester

Monday 30 January 2017 – Friday 23 June 2017

Exam dates

Autumn semester

Monday 16 January 2017 to Saturday 28 January 2017 – including
Saturday 21 January 2017

Spring semester

Monday 22 May 2017 to Saturday 10 June 2017 – including Saturday 27 May and
Saturday 3 June 2017

Late summer resits

Monday 21 August 2017 to Wednesday 30 August 2017 – excluding
Saturday 26 August 2017

2 Course Handbook

This Manual is designed to give you all the information you need to allow you to progress your studies at Nottingham. It describes the various procedures and practices that are in place which are designed to help you achieve your goals. From time to time these have to be changed to meet new requirements put upon us by the University and changes are also made based on student opinion. Therefore at any time if you have a positive suggestion, which can bring about some improvement in what we do, please bring these to the attention of the Student Guild who are represented on a number of School Committees.

3 The School of Biosciences

The School of Biosciences is part of the Faculty of Science and is based mainly on the Sutton Bonington campus; the BSc/MSci Environmental Science and BSc Environmental Biology degrees are located at the University Park campus.

The School of Biosciences has over 80 academic members of staff, 895 undergraduate students and about 550 research and taught postgraduate students. Academic staff are allotted to one of 5 Divisions which reflect specific areas of teaching and research; Agricultural and Environmental Sciences, Animal Sciences, Food Sciences, Nutritional Sciences and Plant and Crop Sciences.

You can find full and detailed information about the School and its staff on our Website – www.nottingham.ac.uk/Biosciences

4 Advice

One of the first people you will meet is your Personal Tutor. Your Personal Tutor will be a member of academic staff with whom you have regular meetings, sometimes as part of a group. Your Tutor is there to give you help and support in person as well as guidance in academic matters. You should make every effort to establish a good relationship. Your Tutor will provide you with advice and details of your exam performance so it is essential that you discuss your progress, in confidence, with him/her at regular intervals.

Here are a few pieces of free advice; they come from fellow undergraduate students and from academic staff who helped us prepare this document.

- Most lecturers teach at a faster pace than you may be used to from school or college.
- Develop good note taking skills early in your university career.
- Lectures are progressive, i.e. each one builds on the last. Missing lectures is therefore dangerous, as is ignoring things that you didn't fully understand at the time.
- Module Conveners may issue a book list. Check with academic staff and 2nd and 3rd year students which are the most valuable to buy. You may not be able to afford them all. Books on your reading lists can be borrowed from the Libraries.
- You should expect to work outside of class time. This may include reading, rewriting your notes, doing coursework, writing reports, etc.
- Don't be afraid of asking questions in lectures. Lecturers like to know that students are following what they are saying. The question you ask may be exactly what other students were wondering but were afraid to ask. Most lecturers will provide opportunities for questions. You can also ask for help outside of lecture time.

- Don't be afraid to approach staff for help. Their offices are accessible to you and they have telephones and email. They are busy people but a large part of their work involves dealing with students. Please see "office hours" section for further details of how to make appointments with academic staff.
- Make use of their time, advice, experience and expertise.
- Remember that activities continue after the exams and that you are required to remain at the University until the end of each semester.
- Never hesitate to see the lecturer if you are having difficulty with his / her module or don't understand why you were given a particular mark
- Handing in coursework late means losing marks. 5% will be lost for every working day late.
- The School has a Learning Community Forum with staff and student representatives from each year. Use this system to make constructive comments about your course.
- If you become ill and have to miss more than a couple of days, or a coursework deadline, or if your performance in an exam is affected, go to see your tutor and complete an Extenuating Circumstances Form and on the website:
<http://www.nottingham.ac.uk/academicsservices/qualitymanual/assessmentandawards/extenuating-circumstances-policy-and-procedures.aspx>
- Missing an exam for any reason is extremely serious and should be avoided if at all possible. Let your Tutor know IMMEDIATELY and complete an extenuating circumstances form available as above.
- Check your email daily and Moodle updates; otherwise you may miss vital information.

5 Student Commitment

Students are expected to access their e-mail accounts regularly as this is the main means of communication. Please do not use any other personal email account which you may have for communication within the University. If you do, you risk losing out on important information

You are required to:

- **Read** this handbook and other documents referred to so that you are clear about the structure of your degree course and what is expected of you.
- **Abide** by University Ordinances, Regulations and other codes of practice (e.g. Computing, Safety etc.).
- Read **notices** placed on official notice boards, these provide an important primary channel of general communication and may advertise such information as re-arrangements to the teaching timetable.

It is wise to carry a diary in which to note appointments with tutors, module conveners, course diary, etc.

6 Your School and Your Studies

Teaching Staff - Lecturers are responsible for teaching components of modules and for setting and marking assignments and examinations.

Each module has a **Convener** who is responsible for its organisation. At the start of the module, the Convener will issue to each student a document describing its aims, content, objectives, transferable skills, methods of assessment, dates for submission and return of coursework and penalties for late submission. Students will be given coursework turnaround details. S/he will also conduct a feedback exercise at the end of the module to gauge student opinion.

Each course has a **Course Director**, responsible for overseeing its structure and smooth running. The Course Director ensures balance between modules and liaises regularly with other staff to ensure that appropriate teaching and learning are provided. The **Course Directors** are directly responsible to the **Assistant Pro-Vice-Chancellor for Teaching and Learning** for ensuring that all levels of the teaching management structure operate efficiently. They should be notified of any significant problems. **Heads of Division** are ultimately responsible for the services provided by their staff.

The **Assistant Pro-Vice-Chancellor for Teaching and Learning** oversees the organisation and management of teaching across the School.

The **Semester 1 Tutor** is responsible for maintaining a balance of work between the core Semester 1 modules. S/he appoints student representatives and holds meetings at which any matters which students may wish to raise can be discussed. Don't be afraid to make your views known!

A list of the staff who hold these positions are included in this handbook (see Staff Roles section). Students should feel able to approach any of them with concerns they may have about aspects of their education. Your Personal Tutor can advise you and make the appropriate contacts.

7 Staff Roles

| Role In School | Staff Member | Location <i>See key at end of table</i> | Tel | Email @nottingham. ac.uk |
|--|--------------------------|---|------------|---|
| Head of School | Prof Simon Langley-Evans | MB | 16139 | Simon.Langley-Evans |
| Director of Administration | Dr Sarah Johnson | MB | 16000 | Sarah.Johnson |
| PA to Head of School and School Manager (Academic Administration) | Ms Susan Blencowe | MB | 16010 | Susan.Blencowe |
| Sutton Bonington Programme Manager | Ms K J Wilson | Barn | 16002 | Kathy.Wilson |
| Sutton Bonington Manager | Miss Helen Wells | Barn | 86504 | Helen.Wells |
| 4-Year Degree Tutor (Euro. Cert.) | Rachel Jessop | BBSB | 16162 | Rachel.Jessop |
| Marketing Manager | Ms Helen Rotherforth | MB | 16607 | Helen.Rotherforth |
| Sutton Bonington Programme Administration | Mrs Gill Fox | Barn | 86501 | Gillian.Fox |
| IT Support Officer | Mr Dave Walters | JCG | 16511 | Dave.Walters |
| U21 Co-ordinator | Rachel Jessop | BBSB | 16162 | Rachel.Jessop |
| Sutton Bonington Administrator | Mrs E Staves | Barn | 86504 | Elena.Staves |
| Sutton Bonington Senior Administrator | Mrs L Eaves | Barn | 86508 | Linda.Eaves |

Building Locations

BBSB = Bioenergy and Brewing Science Building

GB = Gateway Building

MB = Main Building

SL = South Lab Building

SO = School Office, Main Building

JCG = James Cameron Gifford Library

| Heads of Division | Name | Building <i>See key at end of table</i> | Tel | Email @nottingham. ac.uk |
|--|--------------------|---|------------|---|
| Animal Sciences | Prof P Garnsworthy | SL | 16065 | Phil.Garnsworthy |
| Agricultural and Environmental Sciences | Prof S Mooney | GB | 16257 | Sacha.Mooney |
| Food Sciences | Prof Tim Foster | FS | 16246 | Tim.Foster |
| Nutritional Sciences | Prof Andy Salter | NL | 16120 | Andy.Salter |
| Plant and Crop Sciences | Prof M Holdsworth | PCS | 16323 | Mike.Holdsworth |

| Key Roles | Name | Building <i>See key at end of table</i> | Tel | Email @nottingham. ac.uk |
|---|------------------------------|---|----------------|---|
| Warden Bonington Hall | Dr I Hardy | SL | 16052 | Ian.Hardy |
| Senior Tutors | Prof M R Luck Dr L Bailey | SL | 16309 16255 | Martin.Luck Liz.Bailey |
| Semester 1 Tutor | Dr K Pyke | PCS | 13216 | Kevin.Pyke |
| Exam. Officer | Dr M Elmes | NL | 16183 | Matthew.J.Elmes |
| Study Abroad Co-ordinator | Dr Marcus Alcocer | NL | 16103 | Marcus.Alcocer |
| Biosciences Director of Learning and Teaching | Dr Fiona McCullough | NL | 16118 | Fiona.Mccullough |
| Malaysia School Coordinator | Dr Marcus Alcocer | PCS | 16013 | Marcus.Alcocer |
| Industrial Placement Officers & School Placement Officers | Dr J Wayte Rachel Jessop | BioB | 16171 14380 | Judith.Wayte Rachel.Jessop |

Building Locations

BioB = Bioenergy Building
 FS = Food Sciences
 GB = Gateway Building
 NL – North Lab
 PCS= Plant and Crop Sciences
 SL = South Lab Building

| Course Directors | Name | Building <i>See key at end of table</i> | Tel | Email @nottingham. ac.uk |
|---|------------------------------|--|----------------|---|
| Agriculture Agricultural and Crop Science Agricultural and Environmental Science Agricultural and Livestock International Agricultural Science | Prof P Wilson | SL | 16075 | Paul.Wilson |
| Animal Science | Dr D Sweetman | SL | 16019 | Dylan.Sweetman |
| Applied Biology & Biotechnology | Dr Nagamani Bora (Mani) | PCS | TBC | Nagamani.Bora |
| Environmental Biology | Dr Ruth Blunt | Gateway Building, SB, or B47, Life Sciences, UP | 16288 | Ruth.Blunt |
| Environmental Science | Dr Ruth Blunt | Gateway Building, SB, or B47, Life Sciences, UP | 16288 | Ruth.Blunt |
| Food Science & Nutrition and Food Science | Dr D Gray | FS | 16147 | David.Gray |
| Microbiology | Dr J Hobman | FS | 16166 | Jon.Hobman |
| Master of Nutrition and Dietetics | Dr F McCullough | NL | 16118 | fiona.mccullough |
| Nutrition | Dr P Jethwa Dr J Majewicz | NL NL | 16604 16106 | Preeti.Jethwa Jon.Majewicz |
| Plant Science | Dr Kevin Pyke | PCS | 13216 | Kevin.Pyke |

Building Locations

FS= Food Sciences Building
 GB = Gateway Building
 NL = North Lab Building
 PCS= Plant and Crop Sciences
 SL = South Lab Building

8 Academic Staff and Locations

| Name | Room | Telephone Number | Divisions* |
|------------------------|---|------------------|------------|
| Dr R Alberio | B223, South Laboratory Building | 0115 951 6304 | AS |
| Dr M Alcocer | 49E, 2 nd Floor, North Laboratory Bldg | 0115 951 6103 | NS |
| Dr R Anand-Ivell | B216, South Laboratory Building | 0115 951 6298 | AS |
| Mrs A Avery | 49D, North Laboratory Building | 0115 951 6238 | NS |
| Dr E Bailey | C21, The Gateway Building | 0115 951 6255 | AES |
| Dr M Bell | B228, South Laboratory Building | 0115 951 6056 | AES |
| Ms M Benlloch Tinoco | A18 Biosciences. Main Building | 0115 951 6146 | MB |
| Prof M J Bennett | C06, Plant Sciences Building | 0115 951 3255 | PCS |
| Dr A Bishopp | A15, Plant Sciences Building | 0115 951 6108 | PCS |
| Dr R Blunt | B47, Life Sciences Building or C18 Gateway Building | 0115 951 3238 | AES |
| Dr N Bora | B06, Bioenergy and Brewing Science Bldg | 0115 951 6011 | PCS |
| Dr J Brameld | 43, 1st Floor, North Laboratory Bldg | 0115 951 6133 | NS |
| Prof M Broadley | A05, Plant Sciences Building | 0115 951 6382 | PCS |
| Dr K Brown | B30a, Food Science Building | 0115 951 6509 | FS |
| Dr N Chapman | 306, South Laboratory Building | 0115 951 6082 | PCS |
| Dr L Coneyworth | 58, 2nd Floor, North Laboratory Bldg | 0115 951 6124 | NS |
| Prof I F Connerton | B28, Food Sciences Building | 0115 951 6119 | FS |
| Dr D Cook | C04, Bioenergy and Brewing Science Bldg | 0115 951 6245 | FS |
| Prof N Crout | C19, The Gateway Building | 0115 951 6253 | AES |
| Prof C E R Dodd | B30, Food Science Building | 0115 951 6163 | FS |
| Dr S Egan | C21 School of Veterinary Medicine and Science | 0115 951 6659 | VS |
| Dr M Elmes | 53, 2nd Floor, North Laboratory Bldg | 0115 951 6183 | NS |
| Dr I Fisk | A28, FS Building | 0115 951 6037 | FS |
| Dr R Ford | C03, Bioenergy and Brewing Science Bldg | 0115 951 6685 | FS |
| Prof T Foster | B29, FS Building | 0115 951 6246 | FS |
| Dr M J Foulkes | 312, South Laboratory Building | 0115 951 6024 | PCS |
| Dr R G Fray | C33, Plant Sciences Building | 0115 951 6371 | PCS |
| Dr A P French | C08a, Plant Sciences Building | 0115 951 6108 | PCS |
| Prof P C Garnsworthy | B203, South Laboratory Building | 0115 951 6065 | AS |
| Dr Z Gonzalez-Carranza | C11, Plant Sciences Building | 0115 951 6335 | PCS |
| Dr N Graham | C30, Plant Sciences Building | 0115 951 6681 | PCS |
| Dr D Gray | A29, FS Building | 0115 951 6147 | FS |
| Dr D Greetham | A20 Food Science | 0115 951 6578 | FS |
| Prof S E Harding | A15, The Limes | 0115 951 6148 | FS |
| Dr I Hardy | C26, The Gateway Building | 0115 951 6052 | AES |
| Dr J Harris | C18, Vet School | 0115 951 6316 | AS |
| Dr K Harris-Adams | C311, South Laboratory Building | 0115 951 6066 | AES |
| Dr P J Hill | B21, FS Building | 0115 951 6169 | FS |
| Dr S Hill | A28 Food Sciences | 0115 951 6145 | FS |
| Dr J L Hobman | B22, FS Building | 0115 951 6166 | FS |
| Prof M J Holdsworth | 301B, South Laboratory Building | 0115 951 6046 | PCS |

| | | | |
|-------------------|---|---------------|-----|
| Prof J Hort | C10, Bioenergy and Brewing Science Bldg | 0115 951 6222 | FS |
| Rachel Jessop | C05, Bioenergy and Brewing Science Bldg | 0115 951 6162 | FS |
| Dr P Jethwa | 55, North Laboratory Building | 0115 951 6604 | NS |
| Miss J Kearns | 30, 1st floor, North Laboratory Bldg | 0115 951 6756 | NS |
| Prof I P King | C21, Plant Sciences Building | 0115 951 6372 | PCS |
| Dr J King | C26, Plant Sciences Building | 0115 951 3205 | PCS |
| Dr B Lomax | C24, The Gateway Building | 0115 951 6258 | AES |
| Prof M R Luck | B207, South Laboratory Building | 0115 951 6309 | AS |
| Dr S Lydon | C08, Plant Sciences Building | 0115 951 6289 | PCS |
| Dr J Majewicz | 37, 1st floor, North Laboratory Building | 0115 951 6106 | NS |
| Dr S Price | C08 Bioenergy and Brewing Science Bldg | 0115 951 6742 | FS |
| Dr K Pyke | C09, Plant Sciences Building | 0115 951 3216 | PCS |
| Dr D Quain | C08 BABS | 0115 951 6160 | FS |
| Dr C Raaff | 26 North Laboratory Bldg | 0115 951 6121 | NS |
| Dr S Ramsden | 308, South Laboratory Building | 0115 951 6078 | AES |
| Dr R Ray | 303, South Laboratory Building | 0115 951 6094 | PCS |
| Dr C E D Rees | B23, FS Building | 0115 951 6167 | FS |
| Prof K Ritz | C22 Gateway Building | 0115 951 6288 | AES |
| Dr T P Robbins | C27, Plant Sciences Building | 0115 951 6329 | PCS |
| Prof J A Roberts | A06, Plant Sciences Building | 0115 951 6339 | PCS |
| Dr A Rosenthal | A24 Food Sciences | 0115 951 6038 | FS |
| Prof A M Salter | 32A, 1st Floor, North Laboratory Bldg | 0115 951 6120 | NS |
| Dr D Scott | B19, FS Building | 0115 951 6221 | FS |
| Prof G B Seymour | A03, Plant Sciences Building | 0115 951 6323 | PCS |
| Prof G Shaw | C29, The Gateway Building | 0115 951 3206 | AES |
| Dr C Sietou | C304 South Laboratory Building | 0115 951 6306 | AES |
| Prof K D Sinclair | B210, South Laboratory Building | 0115 951 6053 | AS |
| Dr M S Sjogersten | C27, The Gateway Building | 0115 951 6239 | AES |
| Dr D L Sparkes | 330, South Laboratory Building | 0115 951 6074 | PCS |
| Dr D Stekel | C20, The Gateway Building | 0115 951 6294 | AES |
| Dr C Stevenson | A57, Vet School | 0115 951 6055 | AS |
| Dr R Stoger | B232, South Laboratory Building | 0115 951 6232 | AS |
| Miss R Stow | 40, 1st floor, North Laboratory Bldg | 0115 951 6170 | NS |
| Dr A Swali | A20, Ground Floor, FS Bldg | 0115 951 6578 | FS |
| Dr R Swarup | C31, Plant Sciences Building | 0115 951 6284 | PCS |
| Dr D Sweetman | B234, South Laboratory Building | 0115 951 6019 | AS |
| Dr J A Swift | 57a, Second Floor, North Lab | 0115 951 6178 | NS |
| Dr R Tarlington | School of Veterinary Medicine and Science | 0115 951 6273 | VS |
| Dr M Taylor | 52, 2nd Floor, North Laboratory Bldg | 0115 95 16104 | NS |
| Dr A Waterfall | B224, South Laboratory Building | 0115 951 6307 | AS |
| Dr S Welham | 24, North Laboratory Building | 0115 951 6129 | NS |
| Dr D Wells | C07, Plant Sciences Building | 0115 951 6108 | PCS |
| Dr H West | C28, The Gateway Building | 0115 951 6268 | AES |
| Mrs E Weston | A22, FS Building | 0115 951 6146 | FS |
| Dr G White | B227, South Laboratory Building | 0115 951 6068 | AS |
| Dr K Whitehead | 28A, 1st Floor, North Laboratory Bldg | 0115 951 6136 | NS |
| Prof P Wilson | 332, South Laboratory Building | 0115 951 6075 | AES |
| Prof Z A Wilson | A03, Plant Sciences Building | 0115 951 3235 | PCS |
| Prof J Wiseman | B205, South Laboratory Building | 0115 951 6054 | AS |

| | | | |
|------------|----------------------------|---------------|-----|
| Dr B Wolf | A27, Ground Floor, FS Bldg | 0115 951 6134 | FS |
| Dr S Young | C25, The Gateway Building | 0115 951 6256 | AES |

***Divisional codes**

AES Agricultural & Environmental Sciences
 AS Animal Sciences
 BBS Bioenergy and Brewing Science Bldg
 FS Food Sciences
 MB Main Building
 NS Nutritional Science
 PCS Plant and Crop Sciences
 VS School of Veterinary Medicine and Science

9 Course Structure, Organisation and Choosing Your Modules

The Academic Year

The academic year at Nottingham is based on 2 semesters (autumn and spring) spread over three terms.

The following definitions might be helpful to you:

- **Credits** indicate a quantity of assessed learning. They contribute to a cumulative indication of modules which a student has completed. One credit equates to approximately 10 hours of study.
- A **Module** is a specified programme of study which is self-contained and attracts a specified number of credits. Examinations are held at the end of most modules. A ten credit module accounts for approximately 100 hours of your time, of which usually no more than 40 hours will be spent in the lecture room or laboratory
- A **Course of Study** is a set of modules satisfying the requirements for a particular degree and attracting 320 credits for an Ordinary Bachelor degree and 360 credits for an Honours degree.
- The levels in a course of study leading to an Honours degree are as follows
 - Year 1 (120 credits) Level 1
 - Year 2 (120 credits) Level 2
 - Year 3 (120 credits) Level 3

And for a Master of Nutrition and Dietetics or MSci degree

- Year 4 (120 credits) Level 4

Credits achieved in Year 1 are for progression purposes only and will not contribute to the final degree classification.

- A **semester** is a division of the academic year. It consists of twelve weeks of teaching, coursework and revision, plus two (Autumn Semester) or four (Spring Semester) weeks of assessment and consultation.
Note: Although each academic year is divided for teaching purposes into two semesters, there is still a three-term pattern of attendance, with breaks at Christmas, Easter and during the summer.
- A **year** is period of study consisting of an Autumn Semester followed by a Spring Semester. **Assessment** may be by means of written examination papers, oral examinations or coursework. Progression and/or degree classification are based on the outcome of the assessment.
- A **mark** module a numerical indication of the quality of the assessed work completed by a student in each. Marks awarded are subject to the approval of the Board of Examiners and are ratified by an External Examiner.

Choosing optional modules*

At module advisory days you will be asked to complete a module registration form that details your chosen optional modules for ALL PERIODS, i.e. for modules totalling 120 credits. All entries must include the module code. **All optional choices must be approved and signed by your Course Director.** You will have an opportunity at the beginning of the Autumn/Spring Semesters (the "Two week change of mind period") to make adjustments to your choices for that semester; you will also need to check that there are no timetable clashes.

Your choice of modules must normally total 60 credits per semester, and in any event not less than **50 credits** or more than **70 credits** per semester. To determine how a Full Year module contributes to the number of credits in a given semester, check the semester credit split for that module in the Module Catalogue modulecatalogue.nottingham.ac.uk/Nottingham

IT IS YOUR RESPONSIBILITY to see that your combination of modules accords with the Regulations for your course and teaching timetable. **Failure to do so could prevent you from progressing to the next year of the course or from graduating.**

Once you have chosen your optional modules and they have been approved, IT IS YOUR **RESPONSIBILITY** to ensure that you read the Declaration, sign the form and hand it to School Office staff. After that date changes to Full Year and Autumn Semester choices will not be allowed. **Failure to hand in the form by the date displayed may lead to incorrect examination entries and records.**

**There are some courses in Year 1 where there are no optional modules; however this information is useful for Years 2 and 3.*

Modules outside Biosciences

If you wish to register for an optional module from outside the School of Biosciences, you should write the module details on your Module Entry Form and obtain a signature in the "Agreed" box from the School that offers the module, as confirmation that the offering School accepts your registration (or email and provide email confirmation).

A complete list of modules within the University can be found in the Catalogue of Modules at modulecatalogue.nottingham.ac.uk/Nottingham

10 Food Science

Course Director: Dr David Gray **Telephone:** 0115 951 6147

See "taught" column to check the semester in which modules are taught

Qualifying Year (Year 1)

Compulsory

Students must take all modules in this group

| Code | Title | Credits | Taught |
|-------------|---|----------------|---------------|
| D211F3 | The Biosciences and Global Food Security | 10 | Autumn |
| D211F4 | Food Commodities and Primary Processing | 10 | Autumn |
| D212A2 | Contemporary Agricultural Systems | 10 | Spring |
| D212F7 | Bacterial Physiology | 10 | Spring |
| D21BF1 | Food Materials and Ingredients | 20 | Full Year |
| D21BG1 | Biosciences Tutorials (Academic Development) and Foundation | 20 | Full Year |
| D21BN1 | Introduction to Nutrition | 20 | Full Year |
| D21BN2 | Biochemistry – The Building Blocks of Life | 20 | Full Year |

Part I (Year 2)

Compulsory

Students must take all modules in this group.

| Code | Title | Credits | Taught |
|-------------|--|----------------|---------------|
| D223F0 | Manufacture of Food (40 credit) | 40 | Autumn |
| D224F0 | Food Product Case Studies | 20 | Spring |
| D224FE | Sensory Evaluation | 10 | Spring |
| D224FA | Microbial Mechanisms of Food Borne Disease | 20 | Spring |
| D224FB | Food Safety and Legislation | 10 | Spring |

*the research project runs only in the Spring Semester

Additional Module Choice Information

Free module choice should total 20 credits

Students can take 20 credits from any University modules at this level if the conditions of registration are met by the student, and there is no clash in the timetable with core modules

Part II (Year 3)

Compulsory

Students must take all modules in this group.

| Code | Title | Credits | Taught |
|-------------|---|----------------|---------------|
| D235F1 | The Microflora of Foods | 20 | Autumn |
| D235F8 | Personal and Professional Development for Food Scientists | 10 | Autumn |
| D235FR | Trends in Food Research | 10 | Autumn |
| D23BF2 | Food Factory Operations | 20 | Full Year |
| D23PRO | Undergraduate Research Project | 40 | Spring* |

*the research project runs only in the Spring Semester

Additional Module Choice Information

Free module choice should total 20 credits

Students can take 20 credits from any University modules at this level if the conditions of registration are met by the student, and there is no clash in the timetable with core modules. All choices must be approved by the Course Director. Students choosing modules outside of the School of Biosciences must also seek approval from Schools that run those modules.

11 Table of Modules

| | | Agric (Production) | Agric (Business) | iABM | Ag & C | Ag & LS | Ani Sci | Biotech | Dietetics | Env Biol | Env Sci | Food Sci | Microbio | Nutrition | Nutri and Food Sci | Plant Sci |
|---|--------|-----------------------|---------------------|----------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|-----------|-----------------------|-----------|
| Title | Code | | | | | | | | | | | | | | | |
| Biosciences Tutorials (Academic Development) & Foundation Science | D21BG1 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | | | | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 |
| | D211F3 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | 10 | 10 | 10 | 10 | 10 |
| The Biosciences and Global Food Security | | | | | | | | | | | | | | | | |
| Biochemistry – The Building Blocks of Life | D21BN2 | 10 of 20 | | | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | | | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 |
| Genes and Cells 1 | D211P1 | 10 | | | 10 | 10 | 10 | 10 | 10 | | | | 10 | 10 | | 10 |
| Animal Biology | D211A2 | 10 | 10 | 10 | | 10 | 10 | | | | | | | | | |
| Introduction to Nutrition | D21BN1 | | | | | 10 of 20 | 10 of 20 | | 10 of 20 | | | 10 | | 10 of 20 | 10 of 20 | |
| Agricultural Business in the Global Economy | D211A3 | | 20 | 20 | | | | | | | | | | | | |
| Microbes and You | D21BF3 | | | | | | | | | | | | 10 of 20 | | | |
| The Physiology of Microbes | D21BF7 | | | | | | | 10 of 20 | | | | | 10 of 20 | | | |
| Dietetics Tutorial (academic Development) | D21BN6 | | | | | | | | 5 of 10 | | | | | | | |
| Introduction to Dietetics | D21BN5 | | | | | | | | 5 of 10 | | | | | | | |
| Food Commodities and Primary Processing | D211F4 | | | | | | | | | | | 10 | | | 10 | |
| Food Materials and Ingredients | D21BF1 | | | | | | | | | | | 10 of 20 | | 10 of 20 | 10 of 20 | |
| The Physiology of Microbes | D21BF7 | | | | | | | | | | | | | | | |
| Introduction to Health Behaviours | D21BN4 | | | | | | | | 10 of 20 | | | | | 10 of 20 | | |
| Global Environmental Processes (UP) | C111E1 | | | | | | | | | 20 | 20 | | | | | |
| Environmental Geoscience (UP) | C111E5 | | | | | | | | | | 20 | | | | | |
| Evolution, Ecology and Behaviour | C11EEB | | | | | | | | | 10 of 20 | | | | | | |
| Dissertation in Environmental Science (UP) | C11BE1 | | | | | | | | | 10 of 20 | 10 of 20 | | | | | |
| Environmental Science and Society | D212E4 | | | | | | | | | | 10 of 20 | | | | | |
| Life on Earth (UP) | C11LOE | | | | | | | | | 10 of 20 | | | | | | |
| Social Psychology UP) | C81SOC | | | | | | | | | | | | 10 | | | |
| Molecules that Changed the World (UP) | F11MCW | | | | | | | | | | | | 10 | | | |
| Plant Science Research Tutorials | D212P5 | | | | 10 | | | | | | | | | | | 10 |

NB Modules in semesters 2 - 6 may have pre-requisite modules. It is your responsibility to ensure you are taking the appropriate pre-requisites for later modules.
Module choices are subject to timetabling constraints. It is therefore important to check the timetable and pre-requisites when making your module choices.

| | | | Agric (Production) | Agric (Business) | iABM | Ag & C | Ag & LS | Ani Sci | Biotech | Dietetics | Env Biol | Env Sci | Food Sci | Microbiol | Nutrition | Nutri & Food Sci | Plant Sci |
|--|-----------|--|-----------------------|---------------------|----------|----------|----------|----------|----------|-----------|----------|----------|----------|-----------|-----------|---------------------|-----------|
| General | Module No | | | | | | | | | | | | | | | | |
| Biosciences Tutorials (Academic Development) and Foundation Sciences | D21BG1 | | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | | | | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 |
| | D21BN2 | | 10 of 20 | | | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | | | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 | 10 of 20 |
| | D212P3 | | | | | | 10 | 10 | 10 | | | | | 10 | | | 10 |
| Introduction to Nutrition | D21BN1 | | | | | | 10 of 20 | 10 of 20 | | 10 of 20 | | | 10 of 20 | | 10 of 20 | 10 of 20 | |
| The Physiology of Microbes | D21BF7 | | | | | | | | 10 of 20 | | | | | 10 of 20 | | | |
| Microbes and You | D21BF3 | | | | | | | | | | | | | 10 of 20 | | | |
| Food Materials and Ingredients | D21BF1 | | | | | | | | | | | | 10 of 20 | | 10 of 20 | 10 of 20 | |
| Contemporary Agricultural Systems | D212A2 | | 10 | 10 | 10 | 10 | 10 | 10 | | | 10 | 10 | 10 | | | 10 | |
| The Ecology of Natural and Managed Ecosystems | D211E5 | | 20 | 20 | 20 | 20 | | | | | | 20 | | | | | 20 |
| Introduction to Dietetics | D21BN5 | | | | | | | | | 5 of 10 | | | | | | | |
| Dietetics Tutorials (academic development) | D21BN6 | | | | | | | | | 5 of 10 | | | | | | | |
| Introduction to Health Behaviours | D21BN4 | | | | | | | | | 10 of 20 | | | | | 10 of 20 | | |
| Grassland Management | D212A1 | | 10 | 10 | 10 | 10 | 10 | 10 | | | 10 | 10 | | | | | 10 |
| Microbial Physiology | D212F7 | | | | | | | | | | | | 10 | | | | |
| Physiology for Food Scientists | D212F9 | | | | | | | | | | | | | | | 10 | |
| Introductory Physiology | D212Z5 | | | | | | | 20 | 20 | 20 | | | | | 20 | | |
| Dissertation in Environmental Science (UP) | C11BE1 | | | | | | | | | | 10 of 20 | 10 of 20 | | | | | |
| Life on Earth | C11LOE | | | | | | | | | | 10 of 20 | | | | | | |
| Evolution, Ecology and Behaviour | C11EEB | | | | | | | | | | 10 of 20 | | | | | | |
| Integrated Agri-Food Markets and Marketing | D212A3 | | | 20 | 20 | | | | | | | | | | | | |
| Managing Tourism & the Environment: Conflict or Consensus (UP) | N12122 | | | | | | | | | | | 10 | | | | | |
| Environmental Science and Society | D212E4 | | | | | | | | | | 10 of 20 | 10 of 20 | | | | | |
| The Anthropology of Human Ecology (UP) | AA1017 | | | | | | | | | | 10 | 10 | | | | | |
| Microorganisms and Disease (UP) | C51201 | | | | | | | | | | 10 | | | 10 | | | |
| Plant Science (UP) | C112P1 | | 10 | | | 10 | | | 10 | | 10 | 10 | | | | | 10 |

NB Modules in semesters 2 - 6 may have pre-requisite modules. It is your responsibility to ensure you are taking the appropriate pre-requisites for your module choices. Module choices are subject to timetabling constraints. It is therefore important to check the timetable and pre-requisites when making your module choices.

Black sections: core Grey Sections: recommended options (UP) = Module based at University Park

12 Timetable Information

Academic Year 2016-2017 Week Pattern for the UK CAMPUS

Teaching starts Thursday 29 September 2016 (if your modules are taught on either a Thursday or Friday)

| Syllabus Plus Timetable Week | Teaching Week | Week Commencing | Comments |
|---------------------------------|------------------|--------------------|--------------------------------------|
| 1 | 1 | 26/09/2016 | <i>Registration/Induction</i> |
| 2 | 2 | 03/10/2016 | Autumn Semester |
| 3 | 3 | 10/10/2016 | Autumn Semester |
| 4 | 4 | 17/10/2016 | Autumn Semester |
| 5 | 5 | 24/10/2016 | Autumn Semester |
| 6 | 6 | 31/10/2016 | Autumn Semester |
| 7 | 7 | 07/11/2016 | Autumn Semester |
| 8 | 8 | 14/11/2016 | Autumn Semester |
| 9 | 9 | 21/11/2016 | Autumn Semester |
| 10 | 10 | 28/11/2016 | Autumn Semester |
| 11 | 11 | 05/12/2016 | Autumn Semester |
| 12 | 12 | 12/12/2016 | <i>term finishes Friday 16/12/16</i> |
| 13 | Vacation | 19/12/2016 | Christmas |
| 14 | Vacation | 26/12/2016 | Christmas |
| 15 | Vacation | 02/01/2017 | Christmas |
| 16 | Vacation | 09/01/2017 | Christmas |
| 17 | Assessment | 16/01/2017 | Assessment |
| 18 | Assessment | 23/01/2017 | Assessment |
| 19 | 1 | 30/01/2017 | Spring Semester |
| 20 | 2 | 06/02/2017 | Spring Semester |
| 21 | 3 | 13/02/2017 | Spring Semester |
| 22 | 4 | 20/02/2017 | Spring Semester |
| 23 | 5 | 27/02/2017 | Spring Semester |
| 24 | 6 | 06/03/2017 | Spring Semester |
| 25 | 7 | 13/03/2017 | Spring Semester |
| 26 | 8 | 20/03/2017 | Spring Semester |
| 27 | 9 | 27/03/2017 | Spring Semester |
| 28 | 10 | 03/04/2017 | Spring Semester (ends 07/04//17) |
| 29 | Vacation | 10/04/2017 | Easter (Good Friday 14/04/17) |
| 30 | Vacation | 17/04/2017 | Easter (Easter Monday 17/04/17) |
| 31 | Vacation | 24/04/2017 | Easter |
| 32 | Vacation | 01/05/2017 | Easter |
| 33 | 11 | 08/05/2017 | Spring Semester |
| 34 | 12 | 15/05/2017 | Revision/Assessment |
| 35 | Assessment | 22/05/2017 | Assessment |
| 36 | Assessment | 29/05/2017 | Assessment |
| 37 | Assessment | 05/06/2017 | Assessment |
| 38 | - | 12/06/2017 | - |
| 39 | - | 19/06/2017 | <i>term finishes Friday 23/06/17</i> |
| 40 | | 26/06/2017 | |
| 41 | | 03/07/2017 | |
| 42 | | 10/07/2017 | |
| 43 | | 17/07/2017 | |
| 44 | | 24/07/2017 | |
| 45 | | 31/07/2017 | |
| 46 | | 07/08/2017 | |

| | | | |
|----|------------|------------|---------------|
| 47 | | 14/08/2017 | |
| 48 | Assessment | 21/08/2017 | Re-sit Period |
| 49 | Assessment | 28/08/2017 | Re-sit Period |
| 50 | | 04/09/2017 | |
| 51 | | 11/09/2017 | |
| 52 | | 18/09/2017 | |

13 Teaching Methods

Lectures

Throughout your university career, you will find that lectures are the most common method of teaching. It is most important for you to ensure that you have a set of good clear notes based on the lectures **and** your own reading. As you progress through the second and third years of your degree, you will be expected to do increasing amounts of reading; it is therefore useful to develop your reading skills during your first year. Teaching of some modules is complemented by the use of teaching software.

Hints and tips for making the most effective use of the teaching and learning opportunities available to you are provided in *Study Skills Guide* given to all students at the beginning of their first year).

NB books which should be purchased will be identified at the start of teaching - you are advised not to buy any books prior to this unless otherwise indicated in the recommended reading lists at the end of each module synopses.

Practical Classes

Course requirements may require you to take practical classes. These may involve laboratory experiments or observations and analysis of data obtained during the sessions. Practical sessions provide an opportunity to learn and develop additional skills in techniques, observation and analysis. Practical classes also provide an opportunity to extend your knowledge of topics not covered in lectures. For each practical course you will receive a laboratory manual or collection of schedules which will expand on the learning experience of the course.

Some large first year classes are taught simultaneously in adjacent laboratories. Consult the class lists posted on the notice boards to identify the laboratory you will work in. For each practical class, at least one member of academic staff will always be in attendance. S/he will be accompanied by postgraduate students who work as demonstrators. In some cases, technicians may also be present to assist. The teaching team is present in the laboratory to aid your learning experience, so please seek their help as much as you need, and ensure you carry out your work safely, with no harm to yourself or other students. Practical classes provide a valuable opportunity for you to get to know the academic staff in a less formal way and for them to help you. These classes frequently provide an excellent opportunity for you to raise questions from the lecture course with the member of staff and deal with problems you may have.

For all practical classes, you **MUST WEAR** a suitable full-length laboratory coat, which must be buttoned at all times. You will be given a lab coat and safety glasses during Week 1 and advised about any other items you need to purchase. You **MUST** also **WEAR** safety glasses at all times unless advised to the contrary by an academic member of staff.

Safe working and good laboratory practices are essential in the laboratory environment and all laboratory exercises must be formally assessed under the regulations of COSHH. Details of these assessments are noted in the laboratory manual or schedule to draw your attention to specific hazards and the requirements of safe practice. During the introduction to a practical class, the member of staff in charge will give a verbal statement on safety issues.

Food and drink **MUST NOT** be taken into the laboratory.

Assessed Work

Many modules have an element of student-centred learning, especially in Parts I (Year 2) and II (Year 3) of your course. The work involved in these is assessed and forms part of the overall mark for the module. The proportion of the mark allotted to coursework is identified in each module description. Penalties are applied for late submission of coursework (5% per working day), unless there are extenuating circumstances and appropriate documentation is provided. In general, modules in the School of Bioscience use electronic submission of coursework through Moodle as the means of submission.

IT Training

IT is increasingly important as a basis of learning, communication and the preparation of your work e.g. dissertation, BSc project thesis and laboratory reports. It is important that you develop/improve your IT skills as you progress through your course.

Computer-aided Learning (CAL)

Several modules include computer-based teaching material, quizzes, exercises, simulations. In order to use these, you must be registered on the School of Biosciences Network. You may be assessed on some of these packages while using them or in the form of a conventional write-up. You should be prepared to take notes as you work through material on computers.

14 Assessment, Progression, Compensation and Reassessment

The University Undergraduate Course Regulations apply to all the School's BSc, MSci and MNutr degrees.

The regulations can be found at:

www.nottingham.ac.uk/academic-services/quality-manual/study-regulations/study-regulations-for-undergraduate-courses.aspx

You should note that:

- The pass mark for a module is 40%.
- **Progression and Compensation (BSc):** You don't need to pass all modules in order to progress to the next stage of your course. Compensation of failed modules can be achieved in the following ways – if you have:
 - (a) passed modules worth at least 80 credits and have a weighted average for the stage of at least 40% with no module marks of less than 30%;
 - or
 - (b) passed modules worth at least 100 credits and have a weighted average for the stage of at least 50%.
 - or
 - (c) passed modules worth at least 90 credits, have marks of 30% or more in modules worth at least 110* credits, and have a weighted average for the stage of at least 45%.

Progression and Compensation (MNutr): At the Part I, Part II and Part III stage, no core module can be compensated with the exception of optional modules for which university regulations apply. In addition, students must obtain at least 35% in both the examination and coursework components of these modules, although a mark between 35% and 39% in either the examination or coursework may be compensated by the other component of assessment.

Progression (MSci): At the end of Part I, students on the MSci degree must achieve an overall average of 55% at first sit in order to progress to Part II.

- **Reassessment:** If you do not reach the criteria for progression at the end of stage of study, you have a right to one re-assessment in each failed module. The form of reassessment is normally the same as for the first sit, with some exceptions (for example some MCQ papers are sometimes replaced with essay-style papers). For modules which are assessed by both coursework and exam, the School of Biosciences requires that, if the module has been failed overall, then you must be reassessed in the examination element of that module, even if that component of assessment has been passed.

In addition, if you have failed the coursework overall (of a module which is assessed by both coursework and examination) you may elect to resubmit remedial coursework. However, if you have passed your coursework overall, you are not entitled to resubmit either the whole coursework or any failed component within your coursework assessments. If you wish to take up the option of remedial coursework, you must make contact with the appropriate module convener (or his/her representative) **within 7 days** of the date of the letter notifying you that you have failed to progress. The module convener will give you a title and submission date for the coursework. Any remedial

coursework must be submitted before the start of the August examination period. However, individual module conveners have the right to set earlier deadlines at the time of setting the coursework.

Please note: for modules which have both an examination and coursework component, it is not possible for you to be reassessed by resubmitting coursework alone; you are required to retake the examination, even if this element of the module has been passed.

This policy allows students to maximise their chances of passing the module after reassessment. In Part I (and Part II [Master of Nutrition]), the ORIGINAL marks are carried forward for degree classification purposes. However, reassessment marks may be considered by the examining boards if the candidate is on the borderline between degree classes.

- **Progression after reassessment:** For progression purposes, the higher or highest of the marks obtained in each module (at first attempt or upon re-assessment) are considered and the progression and compensation regulations applied accordingly.
- **Marking Schemes:** see appendices 1-7.
- **Progression Charts:** see appendix 6 and can be viewed at <http://goo.gl/N492mp>
- **BSc Degree Candidates**

Award of an Honours degree is dependent on completion and submission of a final year project.

When the overall Part I / Part II mark has been computed, it is rounded to provide a single overall integer mark before any degree classification is assigned. Subject to the exception of borderline candidates and those with extenuating circumstances, who may be awarded a higher degree classification, students shall be awarded the class of degree with their overall mark. The classes of honours degree are as follows:-

- First Class - average of 70%+
- Second Class (Division 1) - average of 60-69%.
- Second Class (Division II) - average of 50-59%.
- Third Class - average of 40-49%.

The standardised weighting for the stages of a Bachelor degree will be 33/67 for Parts I and II respectively, and the standardised weighting for an Integrated Master's degree (undergraduate) will be 20/40/40 for Parts I, II and III respectively

Borderline Profiling

Classification borderlines will be based on the overall rounded average mark (credit and stage weighted). Borderline overall averages will be as follows:

2:1-1st 68, 69

2:2-2:1 58, 59

3rd-2:2 48, 49

A student should be given the higher class if either of the following criteria are met:

- Half or more of the final stage credits are in the higher class;
- Half or more of the final and penultimate stage credits are in the higher class

Further Reading

Full details of regulations can be viewed on the UoN Quality Manual page at <http://goo.gl/qoQP3>

15 Extenuating Circumstances

Policy regarding extensions to coursework on grounds of Extenuating Circumstances, Disability or Specific Learning Difficulties Summary:

- 1) Extensions to coursework will not normally be given unless the student has a specific recommendation from the School's Extenuating Circumstances Committee, or Academic/Disability Support.
- 2) Extensions will not normally be given as a result of short-term illness of less than 7 days unless the module convenor agrees this.
- 3) Students with Academic/Disability referrals allowing the option for coursework extension may arrange for a short extension to coursework submission with the module convenor, on the basis of particular circumstances, without the need to apply for extenuating circumstances.
- 4) Students with approved extenuating circumstances may be granted an extension to coursework submission of usually no more than 21 calendar days.

Full details of the school's implementation of University policy is below. Meeting deadlines is an important part of working life. It is important that students develop time management skills and the ability to meet deadlines before undertaking work placements or entering the workforce on graduation. Coursework deadlines are normally set at the start of the module by the module convenor¹, and clearly stated in module documents/introductory teaching sessions. This gives students the opportunity to identify periods of high workload within each semester and plan their time accordingly. Whilst course teams will try to adapt deadlines to avoid coursework 'hotspots', deadlines are set as appropriate for each individual module and it is the student's responsibility to plan their time accordingly.

Extensions to coursework deadlines can be given in limited circumstances – for example, if students have extenuating circumstances, disability or specific learning difficulties. These are dealt with in the following way.

- Extensions to coursework will not be given to students unless they have a specific recommendation from Academic/Disability Support, the School's Extenuating Circumstances (ECs) committee or the module convenor (see below).
- Students with specific recommendations from Academic/Disability Support may request one extension in advance of the deadline, giving justification for why they need it. Students should not expect to be offered an extension, and it is acceptable for the Module Convenor not to allow one, if it is not possible within the module structure – for example, if the work is subject to a very tight marking turn-around period, such as laboratory practical write-ups. In these circumstances, students should be given notice in advance of the deadline that no extensions can be allowed. If the module convenor feels that an extension is appropriate, the following extension lengths, which have been endorsed by Academic Support, will be followed:

Length of Coursework

Up to 2,500 words (or equivalent)
2,500- 5,000 words (or equivalent)
Final Year Dissertation

Extension

Maximum of 2 calendar days
2-4 calendar days
Maximum of 5 calendar days

¹ Where this guidance refers to "module convenor" this can also be taken to include coursework marker/other academic contributor to the module where this person is not the module convenor.

Any further extension would normally only be given on the basis of approved extenuating circumstances.

Any unapproved late submissions will have marks deducted as outlined in the Quality Manual (5% for each working day).

Students who submit coursework late as a result of illness or other circumstances lasting more than 7 days should discuss this with the module convenor or their personal tutor and should submit an EC form in advance of the submission deadline and evidence within 7 days of the submission deadline. If evidence is not available at the time that the form is submitted, it can be submitted within 14 days of the EC form submission. This documentation will be considered via the normal EC process - see:

<http://www.nottingham.ac.uk/academic-services/qualitymanual/assessment-and-awards/extenuating-circumstances-policy-and-procedures.aspx>

- If ECs are accepted, an extension to the submission will be agreed and any marks that have been deducted for late submission will be reinstated.

Any extension (within a teaching semester) for students with ECs will not normally be for more than 21 calendar days, to ensure that all coursework is submitted prior to the coursework return date. Any submission after the return date will not be accepted but a student may be given a first sit opportunity if they have approved ECs.

16 Plagiarism and Paraphrasing

Plagiarism and Paraphrasing

This section is also covered in the Study Skills book. It draws upon information available at the following University Web sources together with guidance from staff in the School of Biosciences. **As work is now submitted electronically through Turnitin, be aware the plagiarism is readily-detected.**

USEFUL ADVICE FOR STUDENTS

One good method to avoid plagiarism is to make notes from material you have read and construct your essay / report, in your own words, from these notes. It is tempting (and easy) to copy and paste, but this is unacceptable and constitutes an academic misconduct. It is also poor practice to construct a draft by copying and pasting material from multiple sources, with the intention of then paraphrasing the resulting document. Apart from the fact that the end-product may be disjointed, the paraphrasing is often incomplete and the work submitted may contain elements of plagiarised material. It is, however, acceptable to include relevant figures and tables from published work, as long as you acknowledge their source by citing the primary reference for them.

To make a specific point, there may be rare occasions when you may have to quote an author verbatim; this is acceptable if you put the quotation in inverted commas and give the source, but you should have a good reason why you can't put the material in your own words.

USEFUL WEBSITES

Academic integrity and plagiarism

<http://www.nottingham.ac.uk/studyingeffectively/writing/plagiarism/index.aspx>

Quality Manual

<http://www.nottingham.ac.uk/academic-services/qualitymanual/assessmentandawards/academic-misconduct.aspx>

Studying Effectively

<http://www.nottingham.ac.uk/studyingeffectively/home.aspx>

DEFINITION OF AN ACADEMIC MISCONDUCT

Any activity or behaviour by a student which may give that student, or another student, an unpermitted academic advantage in a summative assessment is considered to be an act of academic misconduct and unacceptable in a scholarly community. Such action(s) will be considered under the University's Regulations on Academic Misconduct and this may lead to a penalty being imposed

DEFINITION OF PLAGIARISM

The following definition of plagiarism appears in the University Quality Manual:

Plagiarism: representing another person's work or ideas as one's own, for example by failing to follow convention in acknowledging sources, use of quotation marks etc. This includes the unauthorised use of one student's work by another student and the commissioning, purchase and submission of a piece of work, in part or whole, as the student's own.

Note: A proof-reader may be used to ensure that the meaning of the author is not misrepresented due to the quality and standard of English used, unless a School/Department policy specifically prohibits this. Where permitted, a proof-reader may identify spelling and basic grammar errors. Inaccuracies in academic content should not be corrected nor should the structure of the piece of work be changed; doing so may result in a charge of plagiarism.

Work in any year of study which is not undertaken in an Examination Room under the supervision of an invigilator (such as dissertations, essays, project work, experiments, observations, specimen collecting and other similar work), but which is nevertheless required work forming part of the degree, diploma or certificate assessment, must be the student's own and must not contain plagiarised material.

Possible **penalties** for an academic misconduct including plagiarism are:

- a) No marks to be awarded in relation to the specific material which is the subject of the act constituting an academic misconduct (thus leading to a reduced overall mark for the piece of course work, dissertation, examination question or examination script in which the specific material appears)
- b) Award a mark of zero for the entire piece of course work, dissertation, examination question or examination script in which the academic misconduct has occurred
- c) Award a mark of zero for the entire module in which the academic misconduct has occurred
- d) Award a mark of zero for all the assessments in the semester (even where this will lead to a reduction in degree class). In the case of year-long modules, this penalty may affect both semesters
- e) Award a mark of zero for the whole year (even where this will lead to a reduction in degree class)
- f) Require the student to take reassessments (as a result of being awarded zero marks) in the following session before being allowed to progress or complete their course
- g) require the student to register with the University and enrol on modules in which they need to take reassessments (as a result of being awarded zero marks) in the following session before being allowed to progress or complete their course
- h) Terminate the student's course
- i) Withdraw the award of a degree or other qualification from, and issue an amended transcript to, a former student of the University
- j) Full details of possible School and University penalties can be found at:
www.nottingham.ac.uk/academic-services/quality-manual/assessment/academic-misconduct.aspx

ACADEMIC MISCONDUCT

Any activity or behaviour by a student which may give that student, or another student, an unpermitted academic advantage in a summative assessment is considered to be an act of academic misconduct and unacceptable in a scholarly community. Such action(s) will be considered under the University's Regulations on Academic Misconduct and this may lead to a penalty being imposed.

Here is a range of cheating behaviours:

1. False citation (i.e. attributing work to the wrong source)
2. Plagiarism
3. Using unauthorised sources or notes in examinations or tests
4. Dishonestly obtaining material or information prior to examinations
5. Copying from other students
6. Permitting other students to copy your work
7. Soliciting work from others (e.g. individuals, 'editors' or essay banks etc)
8. Submitting your own previously assessed work without acknowledgement (auto plagiarism)

Unauthorised Collaboration, or Collusion, occurs where:

Collusion: cooperation in order to gain an unpermitted advantage. This may occur where students have consciously collaborated on a piece of work, in part or whole, and passed it off as their own individual efforts or where one student has authorised another to use their work, in part or whole, and to submit it as their own.

Note: Legitimate input from University tutors or approved readers or scribes is not considered to be collusion.

Fabrication may take various forms but is essentially concerned with manufacturing aspects of the work produced. For example, the insertion of made-up information, data, sources, quotes, anecdotes or analysis would all amount to fabrication

Recycling or unauthorised, multiple submissions.

The multiple submission by a student of their own material is not, in itself, considered as academic misconduct. Submission of material that has been submitted on a previous occasion for a different summative assessment is, however, unlikely to be academically appropriate. The merit of such material will therefore be a matter of academic judgement and it may attract fewer (or no) marks than would have been the case if it had not been assessed previously

Note:

Plagiarism is regarded as a serious academic misconduct by the University and will be penalised accordingly. Plagiarism can be easily identified by entering suspect passages into search engines. Specialist search engines (e.g. Turnitin) are available to check all submitted work against previously published sources, including coursework submitted by students in the current or previous years. The School of Biosciences uses Turnitin to assist academic staff detect plagiarism; students are required to submit all coursework in electronic form to facilitate automatic on-line detection of plagiarism.

All BSc Research Projects must be submitted electronically to be checked by Turnitin along with the necessary hard copies (see Guidelines for BSc Research Projects).

If a student is required to attend an Academic Misconduct interview within the School for any suspected academic misconduct his/her tutor will be informed of this, together with the Head of School (or nominee), module convenor (or nominee) and the School Manager for Academic Administration (or nominee).

GUIDANCE TO HELP YOU AVOID COMMITTING PLAGIARISM

1. You are allowed to use information from other people's work provided you acknowledge the source. This can apply to a statement, Table or Figure. The best way of doing this for Tables and Figures is to add: "After Smith (1988)" or "Modified from Smith (1988)", and include the reference in your reference list.
2. If you are discussing something somebody else has said, you can say, for example: Smith (1987) claimed that coral reefs in the Pacific were damaged by high temperatures in 1975. Or: It has been claimed that high temperatures in 1975 damaged coral reefs in the Pacific (Smith, 1975).
3. It is rarely necessary to quote previous work directly and you should try to avoid doing this. If quotation is unavoidable, you should put the passage in quotation marks, e.g. Smith (1980) described the outcome of unprecedented high temperatures on coral reefs as: "A disaster for the marine communities in the coastal regions of the Indo-Pacific", and then stated that: "The phenomenon appears to be due to unprecedented high temperatures".

For information on paraphrasing see 8 and 9 below.

4. Authors should be cited in text either as: Smith (1975), Smith and Allen (1978), Allen (1987, 1989), or as (Smith, 1975; Smith and Allen, 1978; Allen 1987, 1989). Note that these are in chronological, not alphabetic order. When more than two authors are quoted, this should be in the form Allen *et al.* (1993) in the text, but the reference given in your reference list should contain the names of all the authors. Do not use numerically cited or ordered references.
5. In your "References" or "Literature cited" section, the following style (authors, date, title, journal, volume number, page numbers; called the "Harvard" style) should be used and references should be listed alphabetically.

Provided you are consistent, you may also use any other accepted style - see journals in the library – unless instructed otherwise by the member of staff setting the coursework.

Smith, A. J. and Allen, N. B. (1986). Temperatures and coral reefs. *Journal of the Marine Biological Association* 86: 101-123.

Smith, A. J., Jones, K. L. and Allen, N. B. (1988). Death of corals due to high temperatures. *Thermal Biology* 27: 19-34.

If the source is only available electronically or is being published "ahead of print", give the DOI number in your reference.

Some electronic journals do not use page number

6. For books, the following style (author, title underlined or in italics, publisher, place of publication) applies:

Allen, N. B. (1992). *Coral Reef Biology*. Blackwells, London.
7. For chapters in edited volumes, the following style (author, date, title of chapter, title of book underlined or in italics, editors, page numbers, publisher, place of publication) applies:
Smith, A. J. (1987). Temperature and bleaching in corals. In: *Coral Reef Biology* (N. B. Allen and C. K. Hodges, eds.), pp. 65-90. Clumber Press, New York.
8. **Paraphrasing**, i.e. verbatim or almost verbatim restatement of a passage is a form of plagiarism frequently used in essays and dissertations. The following is paraphrased from C. H. Gordon, P. Simmons and G. Wynn (date unknown). *Plagiarism - What It Is And How To Avoid It*. University of British Columbia.

Students often ask "How much do I have to change a sentence to be sure I'm not plagiarising?" If you have to ask, you are probably about to commit plagiarism! There is no set number of words that you need to change or add to make a passage your own – the originality must come from the development and expression of your own ideas.

Original work demands original thought. You should try and separate your ideas from those of others. If you use another author's conclusions then acknowledge them. If you come to the same conclusions as another author you should still acknowledge them. Once a piece of work is complete, look at each part and ask yourself if the ideas expressed are entirely your own, and whether the general language or choice of words is your own. If the answer to either is "no" the work should be credited to the original author

9. Examples

9.1 Original

From Smith (1992):

The author has found that corals respond to high temperatures by expelling their zooxanthellae. This causes them to go white, a phenomenon known as "bleaching." Such corals soon become covered in algae, which makes it difficult for new coral planulae to settle and start a new colony (Davies, 1980). The phenomenon of bleaching is similar to the effect of a crown-of-thorns starfish (*Acanthaster planci*) attack where the polyps are digested by enzymes secreted onto the colony surface (Brown, 1990). As Jones (1972) found, *A. planci* poses a severe threat to corals in the Indo-Pacific. The recent occurrence of high numbers of these starfish on reefs has been correlated to run-off from land which contains high levels of plant nutrients (Jones, 1986). The subsequent increase in the number of algae apparently enhances the survival of the filter-feeding larvae of the starfish.

To include this text verbatim in your own work, *without* placing the entire paragraph in quotation marks and acknowledging Smith (1992) (see 3 above) would constitute plagiarism.

9.2 Paraphrased version

Paraphrased from Smith (1992):

Smith (1992) has found that corals respond to high temperatures by expelling their zooxanthellae. This phenomenon, known as "bleaching", causes them to go white. Such corals quickly become covered in algae and this makes it difficult for new coral planulae to settle and begin developing a new colony (Davies, 1980). Bleaching is similar to the effect of a crown-of-thorns starfish (*Acanthaster planci*) attack. Brown (1990) note that this is where the polyps are digested by enzymes secreted onto the colony surface. Jones (1972) found that *A. planci* may be a severe threat to corals in the Indo-Pacific. Recently high numbers of these starfish on reefs has been correlated to run-off from land with high levels of plant nutrients (Jones, 1986). The increase in the number of algae apparently enhances the survival of the filter-feeding larvae of the starfish.

To include this text in your own work, even *with* the initial acknowledgment Smith (1992) would constitute plagiarism since it reads as if only the first sentence is taken from Smith, and the rest of the references (Davies, Brown and Jones) have been sourced and read by you and that the development and expression of the text is your own original work.

9.3 Unacknowledged version (i.e. submitting this as if it were your own thoughts or work)

The presence of high numbers of crown-of-thorns starfish (*Acanthaster planci*) on reefs has been connected to run-off from land containing high levels of plant nutrients. This causes an increase in the number of algae which results in better survival of the filter-feeding larvae of the starfish. The starfish kills corals by secreting digestive enzymes onto their surfaces. *A. planci* poses a severe threat to corals in the Indo-Pacific and their effect is similar to that caused by "bleaching", a phenomenon caused by high temperatures which results in zooxanthellae being expelled. Subsequently the dead corals become covered in algae which makes it difficult for a new colony to start.

To include this text verbatim in your own work, would constitute plagiarism since there is no acknowledgment of Smith (1992).

9.4 Acceptable version (based on information from Smith, reading the cited references yourself and drawing upon other work)

Smith (1992) quoted Jones (1972, 1986) in suggesting that the crown-of-thorns starfish poses a threat to corals in the Indo-Pacific, and that their recent upsurge may be due to an increase in plant food levels caused by an input of nutrients from land. Brown (1990) found that these multi-armed starfish killed corals by everting their stomachs onto the coral colony surface and secreting an enzyme to digest the tissues externally. The resulting "bleaching" effect is similar to that which occurs when corals are exposed to high temperatures and the zooxanthellae are expelled (Smith, 1992). Davies (1980) found that the settlement of algae on the colony surface made it difficult for new coral larvae to settle and, although fish often grazed the algae continually, he found they could not keep these under control. Recent studies have shown that plagues of crown-of-thorns starfish may be a natural phenomenon, as the fossilised remains of previous outbreaks have been found in rocks millions of years old (Cromer, 1994).

To present your work like this would not constitute plagiarism.

Note that all the references and authors used in this document with the exception of Gordon *et al.* are fictitious.

PLEASE CONSULT YOUR TUTOR IF YOU ARE STILL IN DOUBT ABOUT PLAGIARISM.

17 Personal Academic Development

This table sets out the goals that you should strive for as you progress through your degree. If you can achieve these you will be well prepared for the diverse opportunities that lie ahead

| | Qualifying year Year 1 | Part I Year 2 | Part II Year 3 |
|-------------------------|--|--|--|
| Learning experience | <ul style="list-style-type: none"> Establish a strong factual base Learn the basics of the scientific method and develop a questioning approach | <ul style="list-style-type: none"> Link knowledge from diverse sources and develop an ability to relate information Develop a critical and analytical approach to information | <ul style="list-style-type: none"> Develop the ability to handle complex information Evaluate information and synthesise ideas Develop a creative approach to problem solving |
| Skills acquired | <ul style="list-style-type: none"> Cope with varying lecture styles Make effective use of library and IT facilities Acquire basic laboratory skills | <ul style="list-style-type: none"> Consolidate information skills with extensive use of library and IT Enhance practical skills Enhance presentation skills Organise study and manage time to meet deadlines Appreciate the importance and value of team work | <ul style="list-style-type: none"> Develop a mature approach to study Exhibit strong self-discipline and commitment Clearly articulate knowledge and understanding Respect the views of others and engage in reasoned argument |
| Developing independence | <ul style="list-style-type: none"> Learn to combine teacher-driven study with work based on individual initiative | <ul style="list-style-type: none"> Make independent use of library and other information resources Acquire experience in a range of learning styles | <ul style="list-style-type: none"> Take responsibility for self-learning Demonstrate individual style and flair Exhibit professionalism and ownership of subject |

18 Academic Tutoring

Academic tutoring is the support which the school provides to students in addition to formal teaching. It is complementary to the University's central support services and pastoral care provision.

The objectives of Academic Tutoring are to:

- Help you acquire the necessary study skills to pursue your studies successfully.
- Address problems of lack of knowledge and understanding of the subject.
- Address any problems with aspects of a module or your studies in general.
- Provide you with an overview of your academic progress at module and programme level.
- Assist you in making academic choices e.g. module enrolments, programme pathways.
- Provide assessment feedback to help you improve your future performance.
- Contribute to the acquisition of key employability skills.
- Assist and encourage you to gain employment or continue your education after you graduate.

The School takes its responsibility for academic tutoring very seriously and provides the following to ensure that you are properly supported:

- One-to-one meetings with your personal tutor for personal development, pastoral support and guidance (e.g. on module choices).
- Meetings with course directors for module guidance, either informally or at module enrolment days.
- Tutorials/seminars within modules comprising your degree programme.
- Provision of specific credit-bearing academic tutoring and study skills modules D21BG1: Biosciences Tutorials (Academic Development) and Foundation and, C11BE1 Dissertation in Environmental Science and also through skills embedded in other academic modules including project and dissertation modules.
- Drop-in support sessions for mathematics and statistics.
- Written feedback on assessments including;
 - individual written or verbal feedback on coursework and mark allocation based on a transparent marking scheme,
 - generic feedback one week after exam results,
 - constructive comments provided by markers through individual appointments with module conveners
 - students' evaluation forms collated from students' comments, available through Moodle.
- Student led-seminars.
- Peer support groups, including mentoring.
- 'Office hours' system for appointments with module coordinators/tutors.
- A flexible and comprehensive virtual learning environment (Moodle).
- Links to central support services e.g. Academic Support, the Counselling Service and the Student Services Centre.
- Assistance and guidance on academic administrative matters through the school office.
- Encouragement to make use of central on-line study skills resources e.g. 'Study Skills' www.nottingham.ac.uk/studyingeffectively
- Assistance with personal support or guidance from the School Senior Tutors.

School of Biosciences Tutoring Statement

The full Biosciences tutoring statement can be found in appendix 8 and at <http://goo.gl/dPpFjU> Students are encouraged to read the statement.

19 Attendance Monitoring

Students must attend all teaching activities necessary for the pursuit of their studies, undertake all associated assessments and attend meetings and other activities as required by their School or the University. Where students face difficulty in attending sessions or undertaking assessments and examinations, it is their responsibility to inform their School of this fact and to provide a satisfactory explanation. Please see

<http://www.nottingham.ac.uk/academic-services/quality-manual/registration-attendance-and-study/regulations-governing-attendance-and-engagement.aspx> for further details on attendance regulations at the University.

Two weeks is considered a significant period of absence and students are encouraged to consider interrupting their studies if they will miss this length of time. See for further details on voluntary interruption of studies.

The School will consider all extenuating circumstances relevant to attendance and engagement with a student's studies. Students should make the School aware of any extenuating circumstances as soon as possible to ensure full support can be provided and any alternative arrangements such as coursework extensions can be applied within the approved timescales. See the Quality Manual <http://goo.gl/yX4aTC> or further details on extenuating circumstances.

Individual Schools and Departments have systems in place to monitor attendance during the academic year. Example includes taking registers in lectures, monitoring coursework submission and tutorial attendance, etc. Unauthorised absences are reported to Academic Services and recorded as appropriate. Where students are absent without authorisation, to the point that it is not possible to continue with the course, Academic Services will write to the student stating that they will be deemed to have withdrawn from the University and their student record will be amended to show that they have withdrawn.

Students who are identified to be poorly engaging with their studies or poorly attending teaching activities will be asked to meet with the Student Experience and Support Officer or their Personal Tutor.

Where required the University will report non-attendance and poor attendance to appropriate authorities including the UK Border Agency and Student Finance.

20 Complaints and Appeals Procedures

Details of the University's Complaints and Appeals Procedure can be found at:

<http://www.nottingham.ac.uk/academicservices/qualitymanual/assessmentandawards/academic-appeals-policy-and-procedure.aspx>

The procedure regarding a complaint concerning your course is that in the first instance you should contact the lecturer concerned. If the matter cannot be resolved, the next points of contact would be:

- Module Convener
- Course Director
- Teaching Manager
- Head of Division
- Head of School
- Student Year Representative (names are on the Learning Community Forum notice board together with the Module Convener)

Students are encouraged to involve their Personal Tutors at any stage, whether the matter of concern is of an academic or personal nature. Students also have the right to bring matters of concern before Learning Community Forum.

21 Industry Placements

As an undergraduate student in the School of Biosciences, the vast majority of you can undertake an optional industry placement, between years two and three of your degree, extending your degree to a four year programme.

The year-long placement is open to you if you are studying one of the following degree programmes:

- BSc Agriculture
- BSc Integrated Agricultural Business Management with Industrial Placement Award ¹
- BSc Agricultural and Crop Science
- BSc Agricultural and Livestock Science
- BSc International Agricultural Science ²
- BSc Animal Science
- BSc Biotechnology
- BSc Environmental Science
- MSci Environmental Science ³
- BSc International Environmental Science ²
- MSci International Environmental Science ^{2 3}
- BSc Environmental Biology
- BSc Food Science
- BSc Microbiology
- BSc Nutrition
- BSc Nutrition and Food Science
- BSc Plant Science

You apply for placements during your second year. The School Placement Team help and support you by organising a range of employer presentations on campus, sending email alerts of placement opportunities, running drop-in sessions and one-to-one meetings, and providing online resources.

Further information, profiles of student experiences and useful links can be found here: www.nottingham.ac.uk/biosciences/placements

If you have any questions or want to find out more, contact the School of Biosciences Placement Team, Dr Judith Wayte and Mrs Rachel Jessop, on biosciplacements@nottingham.ac.uk

¹ If you are studying BSc Integrated Agricultural Business Management with Industrial Placement award, then a year-long industrial placement during year 3 is built into the 4 year degree programme.

² If you are studying a degree with an international pathway where you study abroad at the University of Sydney for your second year, you can still undertake an industrial placement. You will need to apply for your placement whilst studying in Sydney. You should be aware that some companies will require you to attend an interview/assessment centre in person, whereas

others will be more flexible and will be able to interview you remotely. You can work together with the School Placement Team by email from Sydney.

³ If you are studying for an MSci degree course, adding a year in industry will mean that the total length of your degree course is 5 years. If you are an international student on an MSci degree course studying in the UK on a Tier 4 visa, and you wish to undertake a year in industry, you need to be aware of the following:

- Once you have secured an industrial placement, you will need to change degree course and apply for a visa extension.
- You may need to make your application for a visa extension from overseas.

The maximum length of time you can study in the UK on a Tier 4 visa at undergraduate level is 5 years. An MSci course with a year in industry is therefore at the maximum length, so if you were to fail one or more modules, you would not have the opportunity of resitting a year in the UK.

If you have any questions or want to find out more, contact the School of Biosciences Placement Team, Dr Judith Wayte and Mrs Rachel Jessop, on biosciplacements@nottingham.ac.uk

21.1 Year Out and Erasmus

The School of Biosciences has established an ERASMUS programme of Student Exchange with a number of European Institutions in France, Germany and Spain.

All students taking honours degrees in the School (except MNutr) are able to take an additional Certificate in European Studies (normal entry requirement is at least a grade B in the second language that the student intend to improve at GCSE level). The Certificate consists of an additional year over and above your 3-year BSc degree programme and commences after the second year in September of Semester 5 and concludes at the end of Semester 6. You will then re-join the normal 3-year programme at the beginning of Semester 7.

Students entering the School need to apply to take the Certificate following a meeting which outlines the principles of the Certificate. Once the application is confirmed, students must submit their application in writing to the School Office.

Students taking the Certificate follow preliminary language training during Year 2 (Part I) by taking 10 credits of French, German or Spanish languages (held in the Language Centre, University Park) and 50 credits of Science modules in each of semesters 3 and 4. In Semester 5 and 6; students will be on placement in an academic Institution in another European country where they will follow courses, including language modules in both of the semesters in placement; the courses must be taken in the language of the chosen Country. Students will also need to complete a European Placement module during semester 5 and 6.

The ERASMUS programme is on an exchange basis. Thus it is suggested that students make contact with ERASMUS students within the School who are from the host University together with those Biosciences students who were at the host University in the previous year. Both these contacts can be invaluable in providing assistance and information.

Further information about the scheme is available from Ms Elena Staves (Student Services Centre, The Barn) or Rachel Jessop (C05, Bioenergy and Brewing Science Bldg, SB).

SUPPLEMENTARY REGULATIONS FOR THE EUROPEAN CERTIFICATE

In addition to the normal progression rules for undergraduate study, the following progression rules apply to the European Certificate element.

Part I candidates achieving a mark of 50% or more in each of the Autumn and Spring Semester language modules will progress to the language module in the Autumn of the year of the Certificate in European Studies (Biosciences). Part I candidates achieving a mark of 40-49% in the Autumn and/or Spring Semester language module(s) will normally be advised to discontinue with the Certificate in European Studies (Biosciences). Candidates achieving a mark of less than 40%, at first attempt, in the Autumn and/or Spring semester language module(s) will be advised to discontinue with the Certificate in European Studies (Biosciences). If, after reassessment, candidates do not achieve a mark of at least 50% in the Autumn and/or Spring Semester language module(s) they may not continue with the BSc with a Certificate in European Studies (Biosciences).

The above regulations as specified for candidates obtaining marks at first attempt. Candidates on the year of the Certificate in European Studies (Biosciences) between Part I and Part II who obtain a mark of less than 40% in the language module cannot progress onto placement in the following semester. Such candidates are offered the opportunity either:

- 1) to transfer to the equivalent 3-year BSc degree without European Studies at the start of the next academic year and thus do not take any further language modules. Or
- 2) to be reassessed in the Autumn semester language module in the August/September reassessment period.

If, after reassessment, a mark of 50% or more is achieved candidates may re-join the Certificate in European Studies (Biosciences) in the following academic year. If a mark of less than 50% is achieved at reassessment candidates will be offered 1) above.

In order to proceed to Part II of the degree BSc with a Certificate in European Studies (Biosciences) candidates must attain pass marks in assessments related to the European Year. Candidates who fail to attain satisfactory marks in the assessment undertaken during the European Year shall be offered the opportunity to transfer to the 3-year equivalent BSc degree without European Studies.

Candidates who fail to achieve the criteria for progression onto the three year equivalent degree without European Studies shall not be permitted to continue on this degree but may be offered the opportunity to transfer to the Ordinary degree.

MARKING SCHEME FOR THE EUROPEAN YEAR

European Placement Module:

Fifty percent of the mark correspond to the attendance and assessment of the courses taken abroad. The other fifty percent correspond to one scientific review, one cultural essay and one translation (see below for information).

50%: Attendance and assessment of courses taken abroad.

50%: Essays and translations.

| <i>Activity Type</i> | <i>Information</i> | <i>Length</i> | <i>Weighting</i> |
|---|---|----------------|------------------|
| Attendance and assessment of courses abroad | Students must attend and sit the exams abroad | Not applicable | 50% |
| Essay 1 | Scientific review | 4000 words | 17% |
| Essay 2 | Culture research paper | 4000 words | 16% |
| Translations | Science into English | 10 * 400 words | 17% |

21.2 Studying Outside the UK

Malaysia Campus

Students on the BSc Biotechnology, BSc Agricultural and Crop Science, BSc Nutrition, BSc/MSci Environmental Science, BSc Environmental Biology and BSc Plant Science courses may have the opportunity to study for one semester or full academic year at our Malaysia Campus as part of their three-year degree programme. All teaching at our Malaysia Campus is in English and the modules and exams are very similar to those in Nottingham. Students from the UK campuses pay a reduced tuition fee during their time abroad and living costs in Malaysia are lower than in the UK.

See link: www.nottingham.edu.my/index.aspx

Universitas 21

Nottingham is a founder member of Universitas 21 which is a global alliance of key universities. You will be able to apply to spend one semester (the first of your second year) studying in one of our partner institutions (including Australia, China, Korea, Mexico, North America, New Zealand, Singapore). Competition for these placements is high but the rewards are considerable.

Find out more about study abroad opportunities at
www.nottingham.ac.uk/internationalstudents/exchanges/index.aspx

Interested? What to do next

Don't miss the Study Abroad Fair, organised by the International Office, which will take place in November 2016. Here, you will learn about all the study abroad options open to you and how to apply. You will also be able to meet with students who have already studied at overseas campuses.

Interested students are advised to find the Study Abroad Team on Facebook to be kept updated with deadlines and events at: www.facebook.com/UoNStudyAbroad and the International Office website:

www.nottingham.ac.uk/internationalstudents/exchanges/index.aspx

22 Channels of Communication

Dissemination of information is an on-going process during the academic year; this will come from both the School Office and academic staff. We use several ways to give out information.

- **Email** - Email is the normal means of communication to individuals or class groups; your tutor and module conveners will email regularly and it is also a good way for you to contact academic staff. However, this and other media should not detract from personal meetings, which are necessary for the communication of several matters including the conveyance and discussion of examination.
- **Moodle** - Moodle is the online learning environment across the University. The resource allows you to access lecture notes, find links to external learning resources, access self-test exercises and assessments, participate in online learning activities, submit assignments and collaborate on group projects. You can log in using your University username and password the day after you have completed your registration online. w: moodle.nottingham.ac.uk
- **The Student Portal** - The Portal is a central part of the University's communication system for staff and students. Make sure you have access to it at: <https://goo.gl/dFwTwP>
- **Social Media** - The University of Nottingham uses the latest technology to bring Nottingham to life and to ensure that you can experience and interact with the University community at any time, see: www.nottingham.ac.uk/connect/nottinghamconnect.aspx
- **Blue Castle website** - students can view their marks, progression status and final award information electronically at: <https://goo.gl/txm85c>

23 Students/Staff Consultation

The courses you are taking have evolved over a number of years and incorporate many features arising from student feedback and evaluation. Each department has its own procedures for allowing students to participate in the evaluation and future development of courses.

Broadly, two channels exist:

- feedback evaluations which enable you to comment on the content, style and objectives of modules; we urge you to take the time and effort to complete these so you and future students can play a role in improving our teaching
- The Learning Community Forum (LCF) consists of course representatives of undergraduate students and teaching staff who discuss a wide range of academic and non-academic matters. Anyone who has comments, criticisms or suggestions that they wish to be discussed should contact one of the representatives, whose names will be notified to you during the first semester. Minutes of the Learning Community Forum will be made available electronically.
- The Student Guild also elects student representatives to the School Board and other School committees. If you want to influence academic procedures in the School and University on behalf of your fellow students, you must join the Guild first.

24 Students' Access to Academic Staff policy

Appointments for meetings with staff should be requested by students by email or in person (by phone or office notice board). Requests by email can be made at any time. Staff should respond to such requests by email within two working days (both during term and outside term-time). Staff are not obliged to send their responses outside of normal working hours, nor during official University holidays, nor when on vacation. They should put out-of-office messages on their emails during vacations and respond within two working days upon return.

Following a request, appointments should be arranged with the student at a mutually convenient time, normally to be held within three working days of the request.

Once an appointment has been made, both the staff member and the student are expected to honour the appointment. Should either be unable to attend they should email to cancel prior to the meeting.

Staff have the option of restricting their availability to students to particular days or times of day (other than in emergencies). In this case, they will communicate their preferred availability to their tutees and to other students they see on a regular basis.

25 Quality Assurance

The primary aim of the University of Nottingham is to sustain and improve the high quality of its provision as one of the leading research-led universities in the United Kingdom. It is also committed to providing a learning environment of the highest quality for students, in which first class teaching is underpinned by excellent research. The School of Biosciences endeavours to maintain these goals in the Biosciences, where relevant in collaboration with other schools, in the following ways:-

- by recruiting motivated students with a proven record of high level of learning;
- by providing a broad education across the discipline;
- enabling the development of an analytical and critical appreciation of scientific ideas and problem solving;
- providing a learning experience enriched by an active research environment;
- enabling the development of independent learning and skills for a wide range of careers within and outside the biological sciences;
- to ensure that students receive appropriate support and guidance in their academic development and career planning;
- to identify and support the academic and pastoral needs of individual students;
- to provide a flexible, effective and adequately resourced learning environment, and
- to maintain and improve teaching and learning through effective management structures in line with the University Quality Manual.

As part of an ongoing process of improving quality, some of our teaching facilities have been recently refurbished and modernised. We look to our students to help us maintain these areas in good condition for the benefit of future generation.

26 Coursework and Examination Feedback

Feedback is provided in three main forms on i) assessed coursework, ii) examination performance and iii) general aspects of each module. In addition to individual marks given for assessed coursework in each module, you will receive an overall module mark and the end of each semester and a full set of module marks will be made available to you through Blue Castle (<https://bluecastle.nottingham.ac.uk>). Your module marks are confidential and not shown to other students. Individual mark components (e.g. coursework marks) are also confidential; the only exception to this is when you receive a mark for a piece of 'group work' in which all members of your group receive the same mark. The sections below provide further details about feedback.

Coursework Feedback

Coursework feedback is normally provided through written comments on your work. For many pieces of coursework, a cover sheet will be returned with your work to explain the mark received and give advice on how your work could be improved. For other pieces of non-examination assessed work, it may not be feasible to provide written comments on your work, for example, a group oral presentation; in such cases, feedback may be provided verbally or by email. Feedback for other assessed work e.g. laboratory practicals, may be provided in other ways as appropriate to the assignment set. Whilst the manner by which you receive coursework may vary depending on the type of coursework set, the purpose of the feedback is to provide a mark for the work together with constructive comments to help improve your performance in future assignments. If you wish to discuss your performance in any assessed work, you should contact the module convenor.

Module convenors will set a deadline by which you must submit coursework and a date when you can expect to receive feedback on your work. This information will be provided when the module convenor sets the piece of work. In normal circumstances, marked coursework and associated feedback should be returned to students within 21 days of the published submission deadline, i.e. students submitting work before the published deadline should not have an expectation that early submission will result in earlier return of work. See details www.nottingham.ac.uk/academicservices/qualitymanual/assessmentandawards/feedback-to-students.aspx

Examination Feedback

After each examination period, general examination feedback from each module will be posted on Moodle. This will include: i) feedback on examination questions where students' performance could be improved, ii) suggested strategies for improving performance in those questions and iii) general comments about examination technique. Students wishing to discuss their examination performance should contact the relevant module convenor(s).

General Feedback

A copy of the Module Report Form, which is a summary of the discussion/feedback with students at the end of each module, can be found within a folder for the module in Moodle. This feedback sheet is used by module convenors to identify which areas of the module students felt worked well, and others that could be improved; in the latter case, the module convenor will make appropriate academic adjustments to the module for the following academic session. The areas of feedback covered by the module report form follow the headings detailed in the Module Report Form.

The University's Quality Manual provides information on good practice for feedback on assessed work and what you can expect to receive as a student at the University of Nottingham – see <http://goo.gl/DI1Gqo>

27 Student Services/departments

27.1 Student Services Centre

The Student Services Centre can provide you with information and support throughout your student life. They are approachable, knowledgeable and most of all they are there to help. Student Services Centres are based at Sutton Bonington, University Park, QMC and Jubilee Campuses. Further details of support services to be given to you on arrival.

27.2 Libraries

The James Cameron-Gifford Library on SB Campus, together with Hallward Library (at UP), George Green Library (UP) and the Medical School Library (QMC and Derby) provide information on all subject areas covered by the School, plus study areas and computing facilities. The on-line catalogue (NUsearch) enables you to search for material held at all branches of The University of Nottingham library. Material from the other campuses can be obtained swiftly for you through the intersite delivery service. During Semester 1 you should attend an introductory lecture provided by the library's Teaching and Learning Support Team. This will be followed up by a tutorial providing an introduction to key resources and discussion on the critical interpretation of published materials as part of the Academic Development and Employability module.

Learning these basic information retrieval and evaluation skills is essential - you will need them for essays and projects throughout your course. As you progress, more specialised studies are undertaken and you must become familiar with the experimental data published in various journals. Acquaintance with published research provides the foundation for most final year research projects. You should not forget to read the more popular scientific press such as *New Scientist* or *Scientific American*, as well as those appropriate to your discipline.

The James Cameron-Gifford Library at Sutton Bonington has over 100 reading places, including quiet areas, bookable/non-bookable study rooms and a number of PCs (see below); it links with several of the Computer Rooms. The Library stock has been developed to support teaching and research in the Schools of Biosciences and Veterinary Medicine, and the library service also provides access to a wide range of databases, electronic journals, and e-books.

Your University Card is also used as a Library borrower's card, and is required for entry to the libraries at University Park campus.

The James Cameron-Gifford Library is open
Monday to Friday 8.00 am 9.45 pm

Saturday 9.00 am - 4.45 pm
Sunday 9.30 am - 4.45 pm

The library is open 24/7 during exam periods. More information can be found on our website at: www.nottingham.ac.uk/library

27.3 IT Facilities

Help and advice

Advice and information for new users of the IT facilities can be found on the University web pages – go to www.nottingham.ac.uk and search for 'Student Essentials'. Several on-line guides can be found, and many of them are available as hard copy booklets in the libraries.

Getting online

Your username and password will get you access to most of the services you will need during your time at the University. Make sure you set a strong password and *never* share your password with someone else. The University will *never* ask you to reveal your password, and you should be suspicious of any request to tell someone your password.

Be sure to check your University email regularly, otherwise you may miss important information.

Computer rooms

There are a number of Information Services (IS) computer rooms on the Sutton Bonington campus which can be used by students, but some are also used for teaching classes. Please look out for notices stating times when the rooms are unavailable due to teaching bookings

There is a large (120 seat) computer room in the Gateway building (room A07); and smaller rooms in the Main Building (rooms B05, B08, B09, and B10). Further computers are available in the James Cameron Gifford Library, including some with large screens for collaborative or group work.

All IS Computer Room computers are set up in an identical manner, with the same selection of software installed or available (Windows, Microsoft Office, EndNote, PDF Creator; and a range of statistical, graphical and course-related software applications).

Computer loans

The JCG library counter offers a short-term laptop and tablet loan service, with loans restricted to use within the Library and Learning Hub areas only.

Students may also make use of the Information Services Laptop Loan service, where longer-term loan periods are possible. This service operates from an office at University Park (Pope Building).

The Portal and Virtual Learning Environment

The **Portal** (linked from the University's home page) is the main point of access for students, through which you can access most of the services you will need. From the Portal you can connect to your email service, module information, Library services, timetables, and other essential information. You can also connect to **Moodle**, which is the University's Virtual Learning Environment (VLE), and is where you will find course information, module documents, lecture notes, reading lists, assignments, etc.

Saving your files and backing up your data

It is the responsibility of each student to save their work safely and securely! Each student has 4GB of personal file storage available on the University's networked servers. This is available as the 'Home Drive' from any IS Computer Room computer, as well as via the web at files.nottingham.ac.uk.

Never save your work onto the hard drive of Computer Room computers – files will be deleted when you log off! Save files to the Home Drive or to an external device.

Any work done on your *own* computer should be backed up – either onto *at least* one external hard drive or onto one of a number of cloud storage options available widely.

Printing

Students can print from any IS computer to the University Print Service. Printing is held in a queue and can be printed off and collected at Print Service printers which are situated close to all IS computer rooms and in the libraries.

You can also print from your home computer, laptop or mobile device using the Mobile Print Service. Simply email your document to mobileprint@nottingham.ac.uk

Wireless

Good wireless coverage on the **eduroam** service should be available in all of the main teaching and social areas of the campus, and in some outdoor areas. In the halls of residence the wireless service is provided by the Hall management companies.

27.4 Accessibility

Teams supporting students with study support, disabilities, specific learning difficulties and long term health conditions are located in the Student Services Centre (SSC), in The Barn on Sutton Bonington Campus, in the Portland Building on University Park, and will be available on all of our other teaching sites.

We can assist with queries regarding:

- Support in making the transition to University, admissions and registration
- Liaison with your School or department about any impact your condition may have on the study elements of your course OR: assessments in relation to disability and dyslexia and recommendations to academic staff about reasonable adjustments in the learning, teaching and assessment environments
- access to alternative formats such as Braille and large print
- residential accommodation – adapted study bedrooms
- accessible transport around and between our Nottingham campuses
- applying for Disabled Students' Allowances
- access to alternative formats such as Braille and large print
- access to specialist technology in libraries
- liaison with libraries for enhanced services such as extended loans
- timetabling arrangements

The Accessibility Team also provides support for students who wish to develop their strategies for academic writing and time management.

The Accessibility Team have online study resources which relate to almost all of the areas you cover in the guide, see

<http://www.nottingham.ac.uk/student-services/support-for-your-studies/academic-support/study-resources/index.aspx>

If you would like to contact us please phone the Student Services Centre on (0115) 951 3710

e: disability-support@nottingham.ac.uk
dyslexia-support@nottingham.ac.uk

The University of Nottingham ACCESS Centre (UNAC), in the Student Services Centre, provides assessments for students who have applied for Disabled Students' Allowances.

Student Welfare Manager

The School also has a dedicated Student Welfare Manager, who provides a point of reference, advice and guidance for members of staff and students in the School about student disability issues and student support. The Welfare Manager is part of a large cross campus team of Student Welfare support managers and officers that meets regularly to share information and good practice. The Welfare Manager in Biosciences works closely with the Accessibility Team in working to ensure that all students are supported and advised appropriately and that there is equality of opportunity for all.

If you have any requirements or concerns talk in the first instance to your Welfare Manager – or contact your personal tutor.

School Welfare Manager

The Welfare Manager for the School of Biosciences is located in the Main Building. You will be meet your Welfare Manager during your induction and will be given further details on your arrival at university.

27.5 Careers and Employability Service

Careers and Employability Service

Many first year students think it is too early for them to start thinking about their future career, but in our experience it is never too early. By making the most of your time at university you can develop skills and build experiences that will be of interest to your future employers.

You could:

- join a **society** or **sports team**
- complete an **Advantage Award** module
- find a **part-time job** through Unitemps

For more information about the Advantage Award, Unitemps or other ways to make the most of university life, you can visit our webpages www.nottingham.ac.uk/careers or speak to a member of the careers team.

Whether you have one or several career ideas or none at all, it is a good idea to start researching possible career options. There are a number of ways the Careers and Employability Service can help you to do this:

- Speak to a Careers Adviser. You can book a one-to-one appointment to discuss your career ideas or questions at Sutton Bonington Campus or at University Park.
- Meet employers on campus. Throughout term time there will be a range of different employers visiting Sutton Bonington Campus and University Park. While you're in your first year you can attend these events to find out about different industries and companies, which will help you with your career planning.
- CV Reviews. Whether applying for work experience, a summer internship or a part-time job you can have your own CV reviewed at Sutton Bonington Campus or University Park.

To book an appointment or CV review, or to book a place at an employer event or workshop visit: www.nottingham.ac.uk/careers/login

To find out about the workshops and events, check your university email to find your weekly Biosciences Careers bulletin. You can also follow @UoNCareers and @UoNBioscareers on twitter.

If you have any questions or if you would like to find out more about The Careers and Employability Service, please do visit one of the careers offices:

- **Sutton Bonington Campus** – Student Services Centre, The Barn, Sutton Bonington Campus
- **Science Faculty team** – B08, Pope Building, University Park

28 Health, Safety & Security

- The research buildings are open to students from 08:30am until 18:00pm, Monday to Friday, except public holidays and University holidays. If for any reason you have to be in the building outside of these times, you must be supervised by an academic member of staff.
- There are lifts available in all teaching buildings for use by disabled students. The other use of the lifts is for movement of goods, and should not be used for other purposes.
- The School has its own Safety Handbook which is available on the web at <http://goo.gl/UASVap>

Fire

- Fire alarms in the teaching buildings are tested at a regular time (eg Wednesday at 10 am in the Main Building). In the event of fire in the building the alarm will sound continuously. In the event of this the lecturer in charge of your class will organise evacuation of the building to the relevant assembly point. Fire exits are clearly sign-posted. Re-entry into the building after a fire alarm is given by the Fire Monitor.

Safety

- Safety in the building, especially in the Laboratories is paramount. See further reference to this matter under 'Practical Classes'.
- Practical classes are continuously supervised by an academic member of staff with the support of demonstrators and occasionally technicians. You should not enter a laboratory until a member of staff arrives.
- Suitable protective clothing must be worn for laboratory classes (see 'Practical Work').
- Defined procedures must be followed for the disposal of certain types of laboratory waste, such as syringes and syringe needles, broken glass, organic solvents and microbial cultures. Instruction on the correct disposal of these and other items will be given in practical classes.
- Safety in Fieldwork. Field Course safety information and the Code of Practice for students can be found at: <http://goo.gl/IBS6EF>

Accidents & First Aid

- For minor injuries, first aid boxes are available in all laboratories and certain offices. In such situations it is likely you can deal with such injury yourself.
- Where an injury is more serious a qualified 'First Aider' should be called. Names of First Aiders are listed on the School's web pages.
- If a 'First Aider' is not available or if further treatment is required, you will be taken to the Cripps Health Centre or A&E at Queens Medical Centre in extreme situations.
- All accidents, whatever their severity, must be reported on an accident report form available from the member of staff taking the class at the time of the accident and will supervise completion of the form.

Food & Drinks

- On no account should food and/or drink be taken into a laboratory, lecture theatre or computing rooms.

29 Modules

YEAR 1 MODULES

D211F3 The Biosciences and Global Food Security

Module Convenor: Dr Kevin Pyke Kevin.Pyke@nottingham.ac.uk

Module Details: Level 1, Autumn Semester, 10 Credits

Expected Number of Students Taking Module: 250

Target Students: Most first year students studying taking degrees in the School of Biosciences including, Nutrition, Biotechnology, and Food science, Animal Sciences, Plant Sciences.

Availability to Exchange Students: Yes - if relevant in the first year.

Pre-requisite(s): Normal entry requirements for School of Biosciences.

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Summary of Content: The module will define global food security as a concept and then examine various aspects thereof, including plant growth, evolution of crop crops, agriculture and crop production, agricultural systems and animal production, the food industry and sustainable nutrition.

Assessment details: There will be several pieces of assessment including a practical questionnaire to be filled in after the practical session, an online assessment for a self-study session (30 minutes), a multiple choice test in week 8 of the module covering all taught material up till then (one hour, 50 questions) and a final exam which will be performed online using ROGO (one hour).

- Practical questionnaire (3 pages) – 500 words 10%
- An online assessment for a self-study session (30 minutes) – 10%
- MCQ test –one hour – 50 questions - 10%
- ROGO exam - one hour (70%)

Aims: To provide first year students with an overview of the issues of global food security and show them the level of complexity that exist in different parts of the food generation system, from plant and crop growth, agricultural systems, generating food stuffs and the environmental effects this process entails and sustainable nutrition.

Learning outcomes: On successful completion of the module, students will be able to:

- Review new technologies used to combat global food security.
- Describe the impact agriculture and food production has on the environment.
- Describe the challenges being faced in global food production in relation to your subject area.
- Develop professional skills to work safely in a laboratory situation.

D211F4 Food Commodities and Primary Processing

Module Convenor: Miss Maria Benlloch Tinoco Maria.Benlloch-Tinoco@nottingham.ac.uk

Module Details: Level 1, Autumn Semester, 10 Credits

Expected Number of Students taking module: 40

Target Students: Food Science' and 'Nutrition and Food Science' students

Availability to Exchange Students: Yes - if relevant in the first year.

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentsservices

MODULE OUTLINE:

Food commodities can be defined as: 'raw materials consumed directly or used to manufacture food products'. The major food commodities we shall study are cereals, oilseeds, fruit and vegetables, tea, coffee, cocoa, herbs and spices, sugar, meat, fish, eggs and milk. Having described the chemical composition of the commodity, strategies employed to store and/or prepare the material for food manufacturing operations will be covered. A common theme, which runs through this module, is quality. What is quality and how can it be defined for each commodity? How does it develop then deteriorate? What methods (chemical, physical or biochemical) can be employed to control quality and slow down deterioration? Each commodity will be dealt with individually but principles which link different commodities will be emphasised. There will also be lectures on the global trade of food commodities in terms of economics/markets, and in terms of trade justice.

CONTENT

1. Food Commodities

Cereals

Over 5% of the entire land surface of the world is covered with cereals. They are a staple of most diets. In the course we will look at the structure and composition of different grains and review how they are best stored. For wheats we will also look at how they are milled to turn them into a major food commodity, wheat flour.

Milk

A detailed account of milk constituents and their physical distribution is given. The chemistry of milk fat globules, casein micelles, lactose and whey proteins is dealt with. This lecture course is completed with an account of the methods used to treat milk prior to human consumption e.g. pasteurisation, sterilisation and homogenisation. Spray drying of milk to yield milk powder is also covered in outline.

Meat and Fish

Fresh foods and associated products make up the greatest part of an average food bill in the UK. In the lectures an understanding of how live muscle becomes meat will be given and the key quality attributes will be discussed. Red meat will be contrasted with poultry, fish and meat analogues.

Eggs

Eggs are a versatile commodity, not only as a nutrient-rich food, but also as a functional ingredient in a wide range of food products. Although fresh eggs are often sold 'locally', there is a significant global trade in liquid and dried eggs.

Oilseeds/fruits and Oil Extraction/Refining

The major global oil commodity crops will be introduced, with an emphasis on oilseed rape, sunflower seed, soya and palm fruit). Industrial methods used to extract oil and to refine it will be explained. The steps taken at different stages of the process to secure high oil quality will be identified.

Fruit and Vegetables

The major and minor constituents of fruit and vegetables (eg water, polysaccharides, vitamins, metal cations, organic acids) are highlighted with reference to their nutritional importance. The modern methods used to preserve perishable crops stem from an understanding of postharvest physiology, biochemistry, molecular biology and genetics. These changes are described in some detail, from the difference between a climacteric and non-climacteric fruit to ethylene biosynthesis and the biochemical changes during fruit ripening.

Tea, Coffee, Cocoa and Sugar

Tea, coffee, cocoa, and sugar are commodities that have been traded globally for hundreds of years. Primary processing of tea, coffee and cocoa maximises the flavour and colour potential of the raw materials. Enzymic browning, and non-enzymic browning reactions will be covered. Sugar (sucrose) is produced to very high purity specifications but at very low costs. Methods for sugar extraction and purification must therefore be simple, cheap and effective. The key principles used in sugar production are discussed to show the underlying science as well as the other factors (safety, economics etc.) that shape the choice of methods for sugar processing.

Herbs and Spices

In addition to the global nature of herb and spice production, key aroma/flavour compounds present in herbs and spices (particularly terpenoids) will be identified. Methods used to extract essential oils will be outlined as will the chemical synthesis of 'nature identical' methanol.

2. Global Trade

Economics of Commodity Trade

A review of the trends in commodity markets provides the basis for an investigation of the two principal issues of interest in primary commodity trade, namely price instability and price decline. We review the explanations for, and implications of, these features with particular reference to producers in developing countries.

Fairtrade

The Fairtrade Foundation is the independent non-profit organisation that licenses use of the FAIRTRADE Mark on products in the UK in accordance with internationally agreed Fairtrade standards. Their vision is of a world in which justice and sustainable development are at the heart of trade structures and practices so that everyone, through their work, can maintain a decent and dignified livelihood and develop their full potential.

ASSESSMENT

Formative – feedback will be given for the group presentation designed to encourage active learning (see 'learning and teaching' section above) Summative

Exam (100%) - One 1.5 hour 60-question multiple-choice examination. The MCQ paper is not available on-line, but sample questions are presented in the pre-exam tutorial.

Guidelines for Student Group Presentations

You will be part of a group of about five students who will be tasked to give one group presentation as part of the module's timetabled slots; each week a different group will present. The topic will be based on the previous week's food commodity category (e.g. milk or oilseeds or cereal or fruit and vegetables etc.).

Purpose of Presentation:

1. Develop presentation skills in an informal/non-assessed environment
2. Expand the knowledge of the class of a particular commodity category
3. Promote team working/a team spirit early on in your degree course.

The presentation will be 15-20 minutes long; each individual will be expected to make a 3-minute contribution as part of the team.

Structure of the Presentation:

Address the following 5 questions (one per student)

1. Geographical location of production of the main commodities in this category (current and historical, and main varieties/breeds); and the site of primary processing (i.e. country of origin or country of destination).
2. Form and manner of storing and transporting the main commodities and the principles employed to preserve material quality (e.g. low temperature, or modified atmosphere packaging...)
3. Routine QC tests of the main raw materials (in its raw or primary processed state) in this category. Explain the basic chemical/physical principles of the test(s)
4. Main applications/markets for this category of commodities
5. Some interesting history about this category of commodities

N.B. A lecturer may provide more specific guidelines for this exercise, e.g. a particular food commodity to focus on.

Lecture Programme: Lecture programme is provisional and more detailed information will be given to you in the first session.

Timetable Autumn 2016

| Monday | 2 p.m. | Lecture 2:30 p.m. | Short Break | Lecture 3:45 p.m. |
|--------------------------------------|---|--|------------------------|---|
| September 28th | Module Introduction (DG) | Oilseeds (DG) | | Oil Extraction and Refining (DG) |
| October 5th | <i>Student Presentations: Oilseeds</i> | Cereal Grains (EW & SM) | | Cereal Milling (EW & SM) |
| 12 th | <i>Cereals</i> | Milk Compositio n (DG) | | Milk Processing (DG) |
| 19 th | <i>Milk</i> | Herbs, Spices and Salt (NY) | | Essential Oil Extraction (NY) |
| 26 th | <i>Herbs and Spices</i> | Eggs (MBT) | | Nuts/Pulses/Beans/Legu mes (MBT) |
| November 2nd | <i>Nuts/Pulses/Beans/Le gumes</i> | Fruit and Vegetables (MBT) | | Fruit Ripening (GBS) |
| 9 th | <i>Fruits and Vegetables</i> | Tea (DG) | | Cocoa (DG) |
| 16 th | <i>Tea and Cocoa</i> | Meat (TP) | | Fish (TP) |
| 23 rd | <i>Meat and Fish</i> | Coffee (IF) | | Sugar (IF) |
| 30 th | <i>Coffee and Sugar</i> | Economics of Commodity Trading (CS) | | Fairtrade (To Be Confirmed) |
| December 7th | Pre-Exam Tutorial (DG) | | | |

Venue: B12 Main Building

CS - Christina Sietou (Agricultural Sciences)

DG – David Gray (Food Sciences)

EW – Emma Weston (Food Sciences)

GBS – Graham Seymour (Plant Sciences)

IF – Ian Fisk (Food Sciences)

MBT - Maria Benlloch Tinoco (Food Sciences)

NY – Nicole Yang (Food Sciences)

SM – Sam Miller (Campden BRI)

TP – Tim Parr (Nutritional Sciences)

Aims: The principal aim of this module is to teach students about the composition of a wide range of food commodities, and how they are handled/treated/processed immediately after production. This will equip students with knowledge about the quality of food commodity materials and how they are traded within the global food supply chain. This module, which is information –rich, will be delivered through lectures. Students will be involved in some active learning: a different small group each week for 20 – 30 minutes, will address the questions 'where on the planet is particular food commodity produced, what primary

handling/processing steps are taken after harvest/slaughter, how is the commodity transported, and what countries are the major customers?’

LEARNING OBJECTIVES

1. Recall the chemical composition and physical structure of major food commodities.
2. Locate geographical regions of food commodity production
3. Articulate the properties of a broad range of food commodities that determine their quality
4. Describe the rudiments of post-harvest/slaughter handling, or primary processing, designed to retain quality during storage/transport

D212A2 Contemporary Agricultural Systems

Module Convenor: Dr Matthew Bell Matthew.Bell@nottingham.ac.uk

Lecturer: Prof Paul Wilson (PW), Dr Stephen Ramsden (SR), Dr Michael Davies (MD), Keely Harris-Adams (KHA), Dr Scott Young (SY), Dr Helen West (HW)

Module Details: A level 1 module taught in the Spring Semester at Sutton Bonington. The module consists of an overview lecture followed by farm visits and student centered learning based on four farm research reports. 10 credits

Expected Number of Students Taking Module: 60

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Target Students: For students studying Agriculture and related subjects and available to Exchange Students - if relevant in the first year.

Summary of Content: The module provides an overview of practical agricultural systems within commercial UK farm contexts. Fundamental concepts of agricultural systems and techniques are introduced via a series of on-farm visits and explanations, with these concepts being further developed by student centered learning, placing the information gained from the visits in the context of contemporary markets, policies and research findings.

Lecture Programme:

Week 1: Introduction: Farm Business Systems - core concepts

Week 2: Business

Week 3: Dairy

Week 4: Waste and Bioenergy

Week 5: Soils

Week 8: Fruit and Vegetables

Sheep 9: Sheep

Week 11: Agri-environmental interactions

Non Lecture Programme:

Please note that the order of the programme may change. Topics may vary depending on the issues affecting the agricultural industry in any one year.

Week 3: Dairy

Week 4: Waste and Bioenergy

Week 5: Soils

Week 6: Arable Production

Week 7: Labour and Machinery

Week 8: Week 9: Sheep

Week 10: Mixed System visit

Week 11: Agri-environmental interactions

Coursework: Coursework will count for 100% of the overall mark for this Module and consists of four 'Farm Research Reports' (maximum 1000 words). The reports will follow, although not necessarily be restricted to, four of the farm visits. The reports will test students' ability to place the information gained from the visits in the context of contemporary markets, policies and research findings.

Assessment:

| | | |
|--------------|----|--|
| Coursework 1 | 50 | Farm System Report: Calculations, production of tables and 1000 words text |
| Coursework 2 | 50 | Farm System Report: Calculations, production of tables and 1000 words text |

Aims: The module aims to provide an overview of practical agricultural systems within commercial UK farm contexts. A range of fundamental concepts of agricultural systems and techniques are introduced via a series of on-farm visits and explanations. The topics of the visit may vary dependent upon the issues affecting the agricultural industry in any one year, but example topics covered include the following: dairy production, arable production, soils, agri-environment interactions, labour and machinery management, farm business systems, water and waste management, mixed farming systems. Students will further develop the concepts introduced via directed student centred learning, including integration of current research findings, leading to the production of four assessed reports.

Learning outcomes: On successful completion of the module, students will be able to:

1) Demonstrate and understanding of contemporary issues facing agriculture within the context of farm systems, enterprises and resource implications. 2) Use appropriate terminology to communicate issues and evidence-base proposals to agricultural and associated professionals. 3) Analyse information from a range of sources and apply this information to an agricultural systems context.

Intellectual Skills: 1) Evaluate the importance of individual aspects of agricultural practice with the context of an individual enterprise or activity and across the farm as a business system. 2) Develop approaches to integrating introductory material across a range of subjects. 3) Assess the motivations and drivers for decisions made within a contemporary agricultural context.

Practical/Professional Skills: 1) Ability to interact and engage with professionals and practitioners in the agricultural industry. 2) Understanding of the terminology used within different aspects of agricultural practice. 3) Place knowledge gained from research into a practical application and context.

Transferable/Key Skills: 1) Appraise the relevance of key information to a range of familiar and unfamiliar contexts. 2) Present information from a wide range of sources in a professional manner. 3) Generate the confidence to engage with professionals in the industry in order to develop one's own understanding of a particular subject. 4) Develop a skill set of terminology and practical knowledge that will be essential for a future career in agriculture and agricultural professional practice. 5) To listen to people. 6) To evaluate the relevance of research results to contemporary agriculture.

Recommended Reading: Nix, J. (2015). Farm Management Pocketbook 2016, The Andersons Centre. Library location: S561.N4. Soffe, R.J. (2003). Primrose McConnell's The Agricultural Notebook, Twentieth Edition, Oxford: Blackwell Science.

D212F7 Bacterial Physiology

Module Convenor: Dr C Rees Cath.Rees@nottingham.ac.uk

Lecturer: Dr P Hill

Module Details: Level 1, Spring Semester, 10 credits

Pre-requisite(s): D211P1 Genes and Cells: 1 or equivalent

Note: This module is a pre-requisite for the modules D223F7 Virology, D224FA Microbial Mechanisms of Food Borne Disease, and D224F9 Analysis of Bacterial Gene Expression in Year 2. This module cannot be used as a pre-requisite unless students attend 75% of the practicals and achieve a pass mark in the practical element of the course (50 % of the module mark based on 4 short laboratory reports).

Number of places: 40

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Target Students: BSc in Food Science, Nutrition and Food Science students and available to students on the Malaysia Campus.

Summary of Content: Principles of bacterial structure and nutrition covering the diverse ways by which bacteria obtain energy. Practical and theoretical elements of bacterial growth, and knowledge of bacterial adaption, including motility, sporulation and regulation of genes by alternative sigma factors. Strategies that bacteria have evolved to allow them to occupy selected environmental niches with additional information on the relevance of this to food. Special emphasis on the handling and presentation of data from microbiological experiments. Twenty x one-hour lectures at approximately two per week throughout the semester; four 3-hour practicals and four 1-hour practicals (results and subculture sessions) held in alternate weeks.

Timetable: Four hours per week to include practicals and tutorials. Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Lecture Programme: More detailed information will be given to you in the first session.

| | |
|----------------|--|
| Topic 1 | Bacterial cell structures Bacterial growth & protein synthesis |
| Topic 2 | Anaerobic & Aerobic metabolism Selective & diagnostic culturing |
| Topic 3 | Developmental processes: Bacterial spores |
| Topic 4 | Adaptation: pH & Osmoregulation Membranes & transport systems Stationary phase & stress adaptation Temperature stress Bacterial Motility & Chemotaxis |
| Topic 5 | Biocides & Disinfection |
| Topic 6 | Food Preservation |
| Topic 7 | Data analysis & |
| Topic 7 | Microscopy |
| Topic 8 | Sterile technique and viable count |

Non-Lecture Programme: Three x 2.5 hr practicals, five x 1 hr practicals; 1hr open book test.

Coursework: 4 practical reports.

Assessment: Examination (40%) MCQ paper - 1 hour, 4 short laboratory reports (50%), and one open book Test (10%) -1 hour.

Aims: The major aim is to provide basic knowledge of bacterial cell structures and growth and to reveal the mechanisms that allow bacteria to respond to their environment. This will form a foundation upon which much of the higher level microbiology courses are based. Students will also be taught how to handle data commonly used in microbiological experimentation and be given training in the basic practical methods required for all microbiological laboratory work.

Learning Outcomes:

- Principles of microbial nutrition covering the diverse processes by which bacteria obtain energy.
- Practical and theoretical elements of microbial growth and knowledge of bacterial cells structures.
- Strategies microorganisms have evolved to allow them to occupy selected environmental niches, including motility, sporulation and regulation of genes by alternative sigma factors, with additional information on the relevance of these to food.

The students will gain: Knowledge and understanding i. knowledge of the ways microorganisms have adapted to growth under various environmental conditions. ii. an understanding of experimental approaches to investigating microbial populations. iii an insight into the relationship between microbial physiology and food preservation techniques. b Intellectual skills ii. an understanding of experimental approaches to investigating microbial populations. c Professional practical skills iv. ability to process and present data from microbiological experimentation v. basic training in sterile technique, culture and identification of microbes. d Transferable (key) skills iv. ability to process and present data from microbiological experimentation v. basic training in sterile technique.

Recommended background reading: Brock, Biology of Microorganisms
Instant Notes in Microbiology, Nicklin et al. Practical Skills in Biomolecular Sciences, Reed et al

D21BF1 Food Materials and Ingredients

Module Convenor: Dr David Gray David.Gray@nottingham.ac.uk

Lecturer: Dr Bettina Wolf

Module Details: A level 1, 20 credit module taught in the Spring and Autumn Semester at Sutton Bonington and assessed by the end of the Spring Semester. The module consists of lectures, practical classes and student centered learning.

Pre-requisite(s): None

Note: This module is a pre-requisite for D223F0 Manufacture of Food (40 credits), and D224FO Food Product Case Studies.

Expected Number of Students Taking Module: 50

Target Students: Honours students studying 'Food Science' or 'Nutrition and Food Science'.

Availability to Exchange Students Yes - if relevant in the first year

Summary of Content: Food materials can be raw, or in the form of manufactured food products. During processing, the material properties of the food are altered; this directly affects the quality of the food product in terms of, for example, its colour, flavour and texture. This module introduces you to properties of these materials (raw and processed), with a particular focus on the chemical and physical nature of carbohydrates, proteins and lipids; the details of food processing/engineering is covered later in the semester 3 module entitled 'Manufacture of Food' (D223F0). Practical classes will support lectures where the properties of food materials can be observed at first hand; analytical methods will be learnt so that particular properties of the food materials can be measured. In addition to these formal classes, there is an opportunity in small teams to compose a poster that explains the properties of the ingredients listed on the label of a specific product.

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/student-services

Lecture Programme: This Lecture programme is provisional and more detailed information will be given to you in the first session.

Semester 1

- Module Introduction
- Why study Food Materials?
- Food Labels and Units of Concentration
- Units and Calculations
- Properties of Water
- Ash Measurement
- pH and Buffers
- Practical: Physical-Chemical Attributes of Foods
- Amino Acids & Protein Functionality
- Lipids and emulsions
- Sugars & Complex carbohydrates
- Practical: Parallel Sessions: Cooking Meets Science 1
- Colour and Spectroscopy
- Practical: Colour and Spectroscopy
- Tutorial: Calculations

Semester 2

- Preservatives & Lipid Oxidation
- Modification of Oils and Fats
- Practical: Edible Fats
- Tutorial: Edible Fats
- Starch and Thickeners
- Practical: Starch
- Viscosity
- Emulsifiers
- Practical: Cooking Meets Science 2
- Interactive Food Label Exercise

Assessment Details:

| | |
|---------------|-----------------------------------|
| Exam 1 | 40% Examination (2 hours) |
| Report | 20% Practical Report (1000 words) |
| In-Class Test | 40% |

Assessment details to be confirmed at that start of the module

Aims:

- learn about the basic chemical and physical nature of the materials that make up foods.
- understand the different techniques employed to measure the composition and certain functional properties of food materials.
- appreciate the changes occurring to food materials during processing, and to become familiar with some of the methods used to measure the changes that determine the quality of the food product and begin to develop the ability to interpret food labels and appreciate the functional properties of listed ingredients.

Learning Outcomes: On successful completion of the module, students will be able to:

1. From a chemical and physical perspective, describe and explain the structure and functional properties of food materials and ingredients.
2. Select from a range of quantitative methods used to measure food composition, and justify your choice.
3. Interpret and present qualitative and quantitative data.

D21BG1 Biosciences Tutorials (Academic Development) and Foundation Science

Module Convenor: Prof Matt Dickinson Matthew.Dickinson@nottingham.ac.uk,
Dr Dov Stekel Dov.Stekel@nottingham.ac.uk

Module Detail: Level 1, Full Year new module, 20 credits

Pre-requisite(s): Biosciences Tutorials (Academic Development) and Foundation Science

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Summary of Content: The content is as follows: The tutorials component is intended to enhance the transition into university and guide students through the academic expectations of their degrees. This part of the module is spread throughout the year and will include three generic sessions on 'study skills and plagiarism', 'study opportunities' and 'career and personal development', and a series of small group tutorials with the academic tutor to develop generic skills such as finding crucial information, oral presentation, data handling and presentation of results, preparation for examinations, and essay writing skills relevant to the Biosciences. The Foundation Science content has three elements: Chemistry, Maths & statistics and Physics. The Chemistry element will include: elements and periodic table; atomic structure and bonding; intermolecular attractions, chemical equilibrium; acids and bases, oxidation and reduction; rates of reaction; basic organic chemistry, isomerism, and rings. The Maths and Stats element will include: calculations, algebra, functions and relationships, powers, logarithms, descriptive statistics, significance, regression and presenting data. The Physics element will include: - units and dimensions; power, energy and heat; light and the electromagnetic spectrum; attenuation/absorption; and radioactivity. There is also an IT element, which interfaces with generic IT training for undergraduates provided within the University.

Assessment Details:

| | | |
|----------------|-----|--|
| Coursework 1 | 25% | 1500 word essay completed in the Autumn Semester |
| Coursework 2 | 12% | 200 word quantitative exercise completed in the Spring Semester |
| Coursework 3 | 13% | 300 word abstract of a scientific paper-completed in Spring Semester |
| Inclass Exam 1 | 25% | Written - Chemistry tests (45 minutes) |
| Inclass Exam 2 | 25% | Written - Mathematics and statistics tests (45 minutes) |

Aims: The aims of this module are twofold: The Tutorial elements are to enhance the academic and professional development of students via small group work within tutor groups. Working in small groups will encourage active participation and knowledge transfer. This part of the module should equip students with essay-writing, presentational skills (oral and written), critical interpretation of published materials, and other generic skills that should benefit them in modules throughout their degree. It will also provide an opportunity to learn and reflect on opportunities available to enhance their transition from University into the workplace. The Foundation Science element will complement this by providing foundation level knowledge of mathematics, physics and chemistry for undergraduate students entering the School of Biosciences. The module aims to compensate for gaps in knowledge caused by differences in individual prior education and to ensure that all students have the basic knowledge of these key disciplines required to underpin their future studies in the School of Biosciences. The syllabus has been developed in conjunction with degree programme leaders across the School.

Learning Outcomes: • Recognise the significance of the core topics in foundation level physics, chemistry and mathematics to their future degree study in the Biosciences. • Understand a range of fundamental concepts in physics, maths and chemistry which form core knowledge for scientists of all disciplines. • Understand the importance of using the correct scientific units and be able to convert between different units of measurement (e.g. SI and non-SI units). • Manipulate mathematical equations and perform calculations designed to improve confidence in dealing with logarithms, exponentials, powers, scientific notation.....etc. • Recognise the basis of fundamental scientific equations, their interpretation and meaning. • Use Microsoft Excel at a basic level to analyse scientific data, enter formulae and plot graphs • Summarise key relevant information succinctly in an abstract. • Give examples of appropriate referencing styles for scientific reporting. • Identify an appropriate approach for solving a quantitative problem through background and collaborative research. • Review a given scientific topic in a written report.

D21BN1 Introduction to Nutrition

Module Convenor: Dr L Coneyworth Lisa.Coneyworth@nottingham.ac.uk

Module Details: Level 1 Autumn and Spring semesters, 20 credits

Note: This module is a pre-requisite for D224N0 Nutrition, Metabolism and Disease; and D223N8 Principles of Animal Nutrition.

Expected Number of Students Taking Module: 180

Target Students: Students studying Master of Nutrition (B401), BSc Nutrition (B400), Nutritional Biochemistry (C770), Nutrition and Food Science (B4D6) and Animal Science (D320).

Availability to Exchange Students: Yes - if relevant in the first year.

Summary of Content: This module aims to provide a comprehensive introduction to the key concepts in the field of Nutrition, including macronutrients, energy metabolism, vitamins and minerals. The role of nutrition in human disease will be introduced in the context of major public health issues (coronary heart disease, cancer, obesity and diabetes). Animal-specific content will include ruminant and comparative animal nutrition and animal product quality. Key academic and transferable skills will also be taught in lectures and tutorials, with a particular emphasis on evidence-based approach to nutrition.

Timetable: Typically one two hour timetabled session per week. Twenty two lectures. Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Lecture Programme: This lecture programme is provisional and more detailed information will be given to you in the first session.

| Week | SUBJECT |
|---------------|---|
| AUTUMN | |
| 1 | Introduction to Module Dietary Reference Values |
| 2 | Macronutrients - Protein |
| 3 | Macronutrients – Carbohydrates |
| 4 | Macronutrients – Lipids |
| 5 | Energetics |
| 6 | Energetics |
| 7 | Vitamins 1 |
| 8 | Vitamins 2 |
| 9 | Minerals 1 |
| 10 | Minerals 2 |
| 11 | Revision session |

Teaching Staff:

Dr Lisa Coneyworth (LC, module convenor), Dr Preeti Jethwa (PJ), Miss Joanne Pearce (JP)

| Week | SUBJECT |
|---------------|---|
| SPRING | |
| 19 | Introduction and Public Health Nutrition |
| 20 | Food Labelling & Pre/pro-biotics |
| 21 | Functional Foods |
| 22 | Obesity & cancer (human) |
| 23 | Equine and companion animal nutrition (animal) |
| 24 | Diabetes (human) |
| 25 | Comparative nutrition & ruminant nutrition (animal) |
| 26 | Coronary Heart Disease (human) |
| 31 | Product quality (animal) |
| 32 | Revision session |
| 33 | Coursework 1 |

Teaching Staff: DR Lisa Coneyworth (LC), Prof Simon Langley-Evans (SLE), Dr Matthew Elmes (ME), Dr J Brameld (JB), Dr Marcos Alcocer (MA), Prof A Salter (AS), Dr Tim Parr (TP), Miss Joanne Pearce (JP).

Coursework: Online assessment of taught content at the end of the Spring Semester (1 hour)

Assessment:

| | | |
|--------------------------|-----|---|
| Exam 1 | 70% | 2 hour online 'short answer' exam (Autumn) |
| Inclass Exam 1 (Written) | 30% | In-course online assessment of 1hr duration at the end of the Spring |

Aims: On successful completion of the module, students will be able to:

- 1) To provide a sufficiently comprehensive basis in nutritional science, both for students preparing to specialise in Nutrition and those preparing for other specialisations.
- 2) To emphasise the scientific, evidence-based approach to nutrition and illustrate the quantitative nature of nutrition science.
- 3) To extend these ideas into applications specific to animal and human nutrition and highlight the differences and similarities between the two disciplines.

Learning outcomes: On successful completion of the module, students will be able to:

- 1) Describe the role of essential nutrients (macro and micro) in mammals.
- 2) Describe the basic principles underlying nutritional energetics.
- 3) Recognise comparative aspects of nutrition between species.

In addition, students focussing on animal nutrition will be able to:

- 4) Describe the role of nutrition in producing high quality animal products for human consumption.

In addition, students focussing on human nutrition will be able to:

- 5) Describe the influence of diet on the prevention of disease.

D21BN2 Biochemistry–The Building Blocks of Life

Module Convenor: Dr Matt Elmes Matthew.Elmes@nottingham.ac.uk

Lecturers: Dr Matt Elmes (ME), Dr Marcos Alcocer (MA), Prof Andy Salter (AS), Dr Andy Murton (AM); Dr Simon Welham (SM); Dr Ranjan Swarup (RS); Dr Kevin Pyke (KP).

Module Details: Level 1 Autumn and Spring Semesters, 20 credits

Expected Number of Students Taking Module: 250

Target Students: All School of Biosciences students in year 1.

Availability to Exchange Students: Yes - if relevant in the first year.

Note: This module is a pre-requisite for D224N0 Nutrition, Metabolism and Disease, D223F0 Manufacture of Food (40 credit), D223N8 Principles of Animal Nutrition, D224A6 Endocrine Control Systems & D224G1 Professional Skills for Bioscientists.

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Summary of Content: This module introduces - proteins, carbohydrates, lipids and nucleic acids. The structure and properties of these will be examined in relation to their function. Topics covered include proteins as structural elements and enzymes, lipids as components of cell membranes, carbohydrates as energy stores and nucleic acids as genetic information and genetic engineering. The process of protein synthesis in prokaryotes will be outlined. The nutritional roles of amino acids, carbohydrates and fats will also be considered briefly. The major metabolic pathways in the cell responsible for energy production (respiration) and biosynthesis of cellular components, including the major pathways of carbohydrate and lipid metabolism along with some aspects of thermodynamics will be covered. Photosynthesis and pathways responsible for the assimilation of nitrogen in plants and eventually animals, will be covered along with general nucleic acid metabolism. In addition general mechanisms for the control of cellular metabolism will also be discussed. The practical sessions are designed to introduce students to several key biochemical techniques. In the first semester this will introduce students to the use of spectroscopy and demonstrate two major separation techniques - chromatography and electrophoresis. The practical sessions in the second semester are designed to introduce the concept of sub-cellular fractionation, enzyme assays and metabolite quantification.

Lecture Programme (provisional):

| Week | Subject | Lecturers |
|------|---|-----------|
| 2 | Nucleic acids - structure | ME |
| 3 | Nucleic acids – Properties and Applications | AM |
| 4 | Amino acids and protein structure | MA |
| 5 | Practical | ME, MA, |
| 6 | Practical | AM, ME |
| 7 | Practical | MA, AM |
| 8 | Protein synthesis | SW |
| 9 | Amino acid metabolism | MA |
| 10 | Nucleotide synthesis and metabolism | MA |
| 11 | Nucleotide synthesis and metabolism | MA |
| 12 | Enzymes | SW |

| | | |
|----|-------------------------------------|---------|
| 19 | Bioenergetics and Respiration | ME, RS |
| 20 | Bioenergetics and photosynthesis | ME, KP |
| 21 | Bioenergetics | ME |
| 22 | Practical | ME, MA, |
| 23 | Practical | AM, ME |
| 24 | Practical | MA, AM |
| 25 | Carbohydrates and lipids-structure | ME, AS, |
| 26 | Carbohydrates and lipids-structure | ME, AS |
| 31 | Carbohydrates and lipids -functions | ME, AS |
| 32 | Metabolic control | ME |

Teaching Staff: Dr Matt Elmes (ME), Dr Marcos Alcocer (MA), Prof Andy Salter (AS), Dr Andy Murton (AM), Dr Simon Welham (SM), Dr Ranjan Swarup (RS), Dr Kevin Pyke (KP).

Coursework: One MCQ based online test and a practical report.

Assessment:

| | | |
|--------------|-----|------------------------------|
| Exam 1 | 40% | 1.5 hour MCQ exam |
| Coursework 1 | 20% | MCQ Moodle assessment |
| Coursework 2 | 40% | Practical Write up in Spring |

Aims: The aim of this module is to introduce students to the basic structure, properties and functions of the four key biological macromolecules namely- nucleic acids, proteins, carbohydrates and lipids. It also aims to introduce the basic metabolic pathways occurring in cells, such as respiration, photosynthesis and the biosynthetic pathways for the key macromolecules. In particular:

1. To provide a basis for the understanding of biochemical processes in living organisms.
2. To provide students with a basic understanding of the structure and key properties of all four major macromolecules.
3. To demonstrate to students how these properties are essential for the biological functions of the macromolecules.
4. To provide students with a basic understanding of the major biochemical pathways in cells and their control.
5. To demonstrate to students how these pathways are essential for the cell.
6. To demonstrate several key biochemical techniques for the separation and analysis of macromolecules and measurement of metabolic processes.

Learning Outcomes: Knowledge and Understanding – to learn of:

The structure, properties and functions of proteins, nucleic acids, lipids and carbohydrates,
Handle kinetic data and understand molarity,
Understand the basic principles of key techniques such as electrophoresis and spectrophotometry,
The major metabolic pathways such as respiration, photosynthesis, lipid and protein biosynthesis,
Bioenergetics and the role of energy in metabolism,
Understand the basic principles of key techniques used to study metabolism such as enzyme assays.

Intellectual Skills – the ability to:

Analyse simple experimental data
Handle simple mathematical concepts relevant to the biological sciences, such as molarity, calibration curves and kinetics.

Practical Skills – the ability to:

Accurately operate simple laboratory equipment, such as pipettes
Collect and record data
Work safely in the laboratory.

Transferable/key skills – the ability to:

Communicate experimental results clearly and concisely in a written form
Work productively as an individual and as part of a team
Manage time efficiently.

YEAR 2 MODULES

D223F0 Manufacture of Food (40 credit module)

Module Convenors: Dr Bettina Wolf Bettina.Wolf@nottingham.ac.uk and Miss Maria Benlloch Tinoco Maria.Benlloch-Tinoco@nottingham.ac.uk

Module Contributors: Dr David Cook, Dr David Gray, Dr N Doherty, Dr M Benlloch-Tinoco

Capped Module at 30: You will need permission from the module convenor to take this module unless it is compulsory for your course.

Module Details: A level 2, 40 credit module taught in the Autumn Semester at Sutton Bonington. The module consists of lectures, tutorials including in small groups and small group practicals.

Pre-requisites:

- D21BF1 Food Materials and Ingredients
- D211F4 Food Commodities and Primary Processing

Target Students: Honours students studying 'Food Science' or 'Nutrition and Food Science' with or without certificate in European studies.

Summary of Content:

Food manufacturing is addressed from three major perspectives in this module: main ingredients or raw materials, processing steps and quality of the final product as detailed below.

- Ingredients: Food structuring ingredients; physical interactions and chemical reactions during conversion from ingredient to food product.
- Processing: Fundamentals and design of key processing and preservation techniques; operations involved in the manufacture process of a range of food products; key processing parameters and their impact on the properties of the product.
- Final product: Quality and shelf – life/ post – processing changes.

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Lecture Programme: Lecture programme is provisional and more detailed information will be given to you in the first session.

| Topic | Type | Subtopic | Time (h) |
|---------------------------------|-----------|------------------------------|----------|
| Canned foods | Lecture | 1 Introduction | 1 |
| | | 2 Thermal processing 1 | 1 |
| | | 3 Thermal processing 2 | 1 |
| | | 4 Heat transfer | 1 |
| | | 5 Designing retort processes | 1 |
| Milk & milk products | Tutorial | 1 Thermal processing | 1 |
| | | 2 Designing retort processes | 1 |
| | Practical | 1 Can temperatures | 1 |
| | Lecture | 1 Introduction | 1 |
| | | 2 Cheese | 2 |

| | | | | |
|--------------------------------------|----------------|---|---|---|
| | | 3 | Yoghurt & Butter | 2 |
| | | 4 | Ice Cream | 2 |
| | Practical | 1 | Manufacture of soft cheeses | 3 |
| Cereals & cereal products | Lecture | 1 | Introduction | 1 |
| | | 2 | Bread | 2 |
| | | 3 | Cakes & Biscuits | 2 |
| | | 4 | Extruded starchy foods 1 | 2 |
| | | 5 | Extruded starchy foods 2 | 2 |
| | | 6 | Enzymic processing of starch | 1 |
| | Tutorial | 1 | Baked starchy foods | 1 |
| | Practical | 1 | Manufacture of baked starchy foods | 3 |
| Confectionary | Lecture | 1 | Chocolate | 2 |
| | | 2 | Sugar confectionary | 2 |
| | Practical | 1 | Manufacture of confectionary | 3 |
| Hydrocolloid ingredients | Lecture | 1 | Polysaccharide structure | 1 |
| | | 2 | Protein gelation | 1 |
| | | 3 | Gelatine and industrial polysaccharides | 1 |
| | | 4 | Application in emulsion based products | 1 |
| | Practical | 1 | Hydrocolloids | 3 |
| Brewing & Cider & RTD | Lecture | 1 | Brewing 1 | 2 |
| | | 2 | Brewing 2 | 2 |
| | | 3 | Cider & RTD | 2 |
| | | 4 | Distilling | 2 |
| Meat & Meat products | Lecture | 1 | Intrinsic properties of meat | 2 |
| | | 2 | Processing, Preservation and Packaging | 2 |
| | Practical | 1 | Sausages | 4 |
| Other and other foods | Lecture | 1 | Module introduction & Why study | 2 |
| | | 2 | Manufacture of Food? | 2 |
| | | 3 | Fat spreads | 1 |
| | | 4 | Revision session | 2 |
| | | 5 | Future of foods | 1 |
| | | 6 | Ready to eat | 2 |
| | Practical /Scl | 1 | Introduction | 1 |
| | | 2 | Practical slot 1/3 | 4 |
| | | 3 | Practical slot 2/3 | 4 |
| | | 4 | Practical slot 3/3 | 4 |
| | | 5 | Group presentation | 3 |
| Essential processes & | Scl | 1 | Food manufacture scenarios | 2 |
| | Lecture | 1 | Comminution | 2 |
| | | 2 | Heat exchangers | 1 |

| | | | |
|-----------------------------|---|----------------------|---|
| processing equipment | 3 | Pipe flow | 2 |
| | 4 | Pumps and vessels | 2 |
| | 5 | Freezing | 1 |
| | 6 | Dehydration | 2 |
| | 7 | Microwave processing | 1 |

Assessment:

| | | |
|----------------|-----|---|
| Report | 35% | Practical project write-up (2000 words). Staged submission: Introduction (25% of final report mark) followed by revised Introduction, Materials & Methods, Results & Discussion, Conclusions (75% of final report mark) |
| Viva Voice | 25% | 20 minute Viva: Demonstrate an understanding of and the ability to link science based concepts learnt during the lectures and practical sessions |
| Presentation 1 | 15% | Group presentation on the practical prior to submission of the practical write up. |
| Inclass Exam 1 | 25% | 90 minute written In-class test. Open book calculations |

Aims: To learn about the manufacturing of a wide range of industrially manufactured food products from the ingredients used to the final packaged food, with an emphasis on key physical and chemical properties, during and after processing, and on the underpinning scientific principles that can be applied to a number of food manufacturing systems.

Learning outcomes: On successful completion of the module, students will be able to:

- 1) Formulate a preservation process for a given food.
- 2) Explain the conversion process of milk, grains and meat to food and drink products.
- 3) Justify ingredients and processing steps to impart a desired food microstructure.
- 4) Solve a practical food manufacturing team challenge based on research, analysis and reformatting of information.

Recommended background reading:

- Singh, R. Paul. Introduction to food engineering / R. Paul Singh, Dennis R. Heldman. 4th ed. Burlington, Mass. London : Academic Press, c2009. **Note:** Also look out for other editions and e-book.
- Fellows, P. (Peter), 1953- Food processing technology : principles and practice / P. Fellows. 2nd ed. Boca Raton, Fla. : CRC Press ; Cambridge : Woodhead, 2000. **Note:** Also look out for other editions.
- Food chemistry / edited by Owen R. Fennema. 3rd ed. New York : M. Dekker, 1996
- Toledo, Romeo T. Fundamentals of food process engineering / Romeo T. Toledo. 2nd ed. New York : Van Nostrand Reinhold, 1991. **Note:** Also look out for other editions.
- Atkins, P. W. (Peter William), 1940- Elements of physical chemistry / Peter Atkins, Julio De Paula. 5th ed. Oxford : Oxford University Press, c2009. **Note:** Also look out for other editions.
- Tucker, G (2011) Essentials of Thermal Processing, Greg Tucker and Susan Featherstone Wiley Blackwell: Oxford.
- Improving the thermal processing of foods/edited by Phillip Richardson. (2004) CRC Press: Cambridge. **Note:** Also look out for other editions and e-book
- Hersom, A.C. (1980) Canned foods: thermal processing and microbiology/A.C Hersom, E.D. Hulland. 7th Ed. Edinburgh: Livingstone.
- Tamime and Robinson's yoghurt: science and technology/edited by A.Y Tamime and R.K Robinson (2007) 3rd Ed. CRC: Cambridge: Woodhead. **Note:** Also look out for e-book.
- Clarke C (2004) The science of ice cream. Cambridge: RSC.

- Lawrie, R. A (2006) Lawrie's meat science. 7th Ed. Cambridge: Woodhead. **Note:** Also look out for e-book.
- Processed meats: improving safety, nutrition and quality/edited by J.P. Kerry and J.F. Kerry. (2011) Oxford: Woodhead. **Note:** Also look out for e-book.
- Stauffer, C.E (1996) Fats and Oils. St. Paul, Minn: Eagen Press.
- Mohos, Ferenc A. (2010) Confectionery and chocolate engineering: principles and applications. Oxford: Wiley Blackwell.
- Industrial chocolate manufacture and used/edited by Stephen T Beckett. (2009). 4th Ed. Chichester: Wiley- Blackwell.
- Bamforth, Charles W (2009) Beer: tap into the art and science of brewing. 3rd Ed. Oxford; New York: Oxford University Press.

D224F0 Food Product Case Studies

Module Convenors: Dr Andrew Rosenthal Andrew.Rosenthal@nottingham.ac.uk and Mrs Emma Weston Emma.Weston@nottingham.ac.uk

Module Details: A level 2, 20 credit module taught in the Spring Semester at Sutton Bonington.

Pre-requisite(s): D21BN1 Manufacture of Food; D223FO Manufacture of Food (40 credits)

Expected Number of Students Taking Module: 30

Restriction: Open as a Level 2 Module for Exchange / Study Abroad Students in the Spring Semester dependant on student's previous learning and core numbers in the current year. Student required to be able to study for the whole spring semester.

Target Students: Honours students studying 'Food Science' or 'Nutrition and Food Science' and available to Exchange Students

Summary of Content: Through problem-based learning (PBL) students will develop skills in diagnosing and solving challenges/problems relating to the manufacture, distribution and/or storage of food products. Students will gather relevant information, synthesise an argument, and disseminate a recommendation/solution. No formal lectures given, but the students will be able to refer to their notes from 'Manufacture of Food' taken in semester 3, and they will be given, or directed to, any additional literature that is necessary for the successful completion of the task in the time available.

PBL Definition: 'The learning which results from the process of working towards the understanding of, or resolution of, a problem' - it is not just 'solving problems'. The most powerful learning comes when a student is dealing with uncertainty. Students need to acquire the process skills not just 'content', therefore they all have to participate.

In small teams, students will be given some information about a problem/challenge relating to a food product. Their task is to fully diagnose the problem/challenge and to set about gathering/synthesising relevant information that will allow them to propose an appropriate resolution to the problem. A range of 5 food products will be covered, one product every two weeks, with one full day per week (i.e. 2 full days per product).

Timetable: Typically 1 full day of group activity per week starting at 09:00. Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Lecture programme is provisional and more detailed information will be given to you in the first session.

- 1 Module introduction (1) & Trial Problem Day 1
- 2 Module introduction (2) & Trial Problem Day 2
- 3 Problem 2 Day 1
- 4 Problem 2 Day 2
- 5 Problem 3 Day 1
- 6 Problem 3 Day 2
- 7 Problem 4 Day 1
- 8 Problem 4 Day 2
- 9 Viva Voce 1
- 10 Viva Voce 2

Coursework: In small groups, students will be given some information about a problem/challenge relating to a food product. Their task is to fully diagnose the problem/challenge and to set about gathering/synthesising relevant information that will allow them to propose an appropriate resolution to the problem. Trained facilitators with appropriate food science/technology backgrounds will provide an appropriate level of support to assist the learning process, and be involved in assessments.

| Task | Assessment Type* | Mark Given | % of Final Mark | Marked Output |
|--------------------------|-------------------------|-------------------|------------------------|----------------------|
| Report - Problem 1 | Individual | 25 | 25 | Marked Output |
| Report - Problem 2 | Individual | 25 | 25 | Marked Output |
| Presentation - Problem 3 | Group | 20 | 20 | Presentation |
| Presentation - Problem 4 | Group | 20 | 20 | Presentation |
| Viva voce | Individual | 10 | 10 | 10 minute Viva Voce |

Aims:

- Develop problem solving skills
- Promote the application of theoretical knowledge to real problems in the food industry.

Learning Outcomes: On successful completion of this module students will be able to:

- Apply relevant knowledge, gained from earlier modules and acquired during the activity, to assist in problem scoping and solving.
- Investigate real scenarios from the food industry demonstrating an appreciation of risk and of any wider business implications within the given scenario.
- Propose and evaluate a range of possible explanations for each scenario that emerges.
- Provide recommendations to resolve the problem
- Interact positively with team members in a time limited environment, by carefully listening, articulating pertinent information and ideas, and taking initiative when necessary.

D224FA Microbial Mechanisms of Food Borne Disease

Module Convenor: Prof Christine Dodd Christine.Dodd@nottingham.ac.uk

Lecturers: Dr Kristelle Brown, Prof Ian Connerton, Dr Cath Rees

Module Details: Level 2, Spring Semester, 20 credits

Prerequisites: D212F7 Microbial Physiology

Capped module at 50: You will need permission from the module convenor to take this module unless it is compulsory for your course.

Target Students: Core for students taking Microbiology, Food Science; optional for students taking Biotechnology. Capped module - registration by agreement with the module convenor only. Availability to Exchange Students - Available where suitable pre-requisite exists.

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentsservices

Summary of Content: This module will cover the characteristics and sources of microbial food-borne pathogens and the mechanisms by which these cause disease. Practicals will provide training in the routine testing procedures used in microbiology laboratories: culture, isolation, enumeration and identification of a range of ACP2 bacterial genera.

Further Activity Detail: Two 1-hour lectures per week for 11 weeks and ten 3-hour practicals. Students must have attended all of the practical sessions for the module to be qualified as competent in safe handling of organisms for level 3 modules for which this module is a prerequisite. The 2h practical test in the laboratory is held in week 11.

Week 1

Introduction to module

Lecture 1 The top ten bacterial pathogens

Lecture 2 Food poisoning statistics

Practical session 1 3h

Week 2

Lecture 3 *Staphylococcus aureus*

Lecture 4 *Bacillus*

Practical session 2 3h

Week 3

Lecture 5 *Salmonella*

Lecture 6 *Salmonella*

Practical session 3 3h

Week 4

Lecture 7 *Vibrio*

Lecture 8 *Yersinia*

Practical session 4 3h

Week 5

Lecture 9 *Escherichia coli* and *Shigella*

Lecture 10 *E. coli*

Practical session 5 3h

Week 6

Lecture *Clostridium*

Lecture *Clostridium*

Practical session 6 3h

Week 7

Lecture *Listeria*

Lecture *Campylobacter*

Practical session 7 3h

Week 8

Lecture Emerging pathogens: *Mycobacterium paratuberculosis*

Lecture Emerging pathogens: *Aeromonas* and *Cronobacter*

Practical session 8 3h

Week 9

Lecture Protozoa in food and water

Lecture Moulds and mycotoxins

Practical session 9 3h

Week 10

Lecture Transfer through the food chain 1

Lecture Transfer through the food chain 2

Practical session 10 3h

Week 11

Lecture Pathogen transfer in Red Meat Production

Lecture Exam revision and module evaluation

Practical exam 2h

Assessment:

| | | |
|--------------|-----|---|
| Coursework 1 | 50% | Short reports based on laboratory reports for 7 practicals |
| Exam 1 | 40% | 1.5h examination: two essays. NO MCQ |
| Coursework 2 | 10% | Laboratory Examination - 2 hour practical examination carried out and written up in the laboratory (2 sides A4 max) |

Aims: The major aims are to provide a fundamental understanding of the microorganisms causing food-borne disease and the mechanisms by which they do this and their routes of transmission. A practical training is in a number of core practical methods needed for the safe handling, culture, isolation, enumeration and identification of a range of ACDP2 pathogens.

Learning Outcomes: On successful completion of this module students will be able to:

1. Comprehend the characteristics and routes of transmission of the major food-borne pathogens and the mechanisms by which they cause disease.
2. Apply a range of practical skills in the laboratory including safe handling, culturing and characterisation of microorganisms under ACDP2 conditions.
3. Collect, record and analyse data by making accurate observations and measurements and make reasoned deductions from them.

D224FB Food Safety and Legislation

Module Convenor: Dr N Doherty Neil.Doherty@nottingham.ac.uk

Module Details: Level 2, Spring Semester, 10 credits

Prerequisites: D21BF1 Food Materials and Ingredients

Expected Number of Students taking module: 75

Target Students: Students studying BSc Nutrition (B400), BSc Food Sciences (D610) and Food and Nutrition degrees (B4D6) and Exchange students.

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Summary of Content: The module will discuss laws relating to the composition, labelling and advertising of food and food products sold for human consumption within the UK and the EU, the responsibilities and liabilities of producer, manufacturers and suppliers of food and food products (for example current changes in food labelling legislation), the minimum legislative standards required in the food industry, the responsibilities and liabilities of the consumer and manufacturer and the role of enforcement officers for food products.

Assessment details:

| | | |
|--------------|----|----------------------------------|
| Exam 1 | 50 | 1.5 hour exam |
| Coursework 1 | 50 | 1000 word (or equivalent) report |

Aims: The aim of this module is to introduce learners to the legislation relating to food. It will enable learners to not only recognise the responsibilities (and liabilities) of those engaged in the production, manufacturer and distribution/supply of food and their related products, but also the legislation that impacts on health attributes and claims for consumer products.

Learning Outcomes: On successful completion of this module, students will be able to:

- Describe how current European and National legislation and guidelines impacts on food and nutritional commodities.
- Outline the general principles and methods associated with determining the efficacy, health attributes, health claims, safety and legal aspects of foods, drinks and supplements.
- Investigate how particular food ingredients (e.g. gluten, nuts, shellfish) can result in adverse physiological reactions and the legislation to inform consumers of food composition.

D224FE Sensory Evaluation

Module Convenor: Dr R Ford Rebecca.Ford@nottingham.ac.uk

Lecturers: Dr Ian Fisk, Mrs Emma Weston

Capped module at 50: You will need permission from the module convenor to take this module unless it is compulsory for your course.

Module Details: Level 2 Spring Semester, 10 credits

Pre-requisites: D21BF1 Food Materials and Ingredients

Target Students: BSc (Hons) Food Science and BSc (Hons) Nutrition & Food Science

Summary of Content: This module considers: the senses and sensory stimuli: panel selection and sensory protocols; experimental design and statistics for sensory evaluation: methods for the sensory evaluation of products; consumer sensory testing; and sensory methods for quality control. Students also have the option to sit the Institute of Food Science and Technology Sensory examination leading to an Intermediate Certificate in Sensory Science, for which the course is accredited.

Timetable: Typically a 3 hour timetabled session per week: thirty-three lectures, regular tutorials/workshop classes, seventy seven hours student led studies including coursework and revision. Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Lecture Programme: Lecture programme is provisional and more detailed information will be given to you in the first session.

| Week | Typical Content | |
|------|--|--|
| 1 | Module Introduction. | The Senses and Sensory Panels |
| 2 | Sensory stimuli and receptors | |
| 3 | Sensory Logistics | An introduction to Experimental design, data analysis and reporting for sensory analysis |
| 4 | Discrimination testing | Discrimination testing in Practice |
| 5 | Quantifying and analysing sensory responses Part 1 | Quantifying and analysing sensory responses: Part 2 |
| 6 | Descriptive techniques | QDA Practical |
| 7 | Descriptive techniques and data analysis (ANOVA) | |
| 8 | Consumer Sensory testing | |
| 9 | Visualising Sensory Data: Principal Component Analysis | Combining Sensory and Consumer Data: Preference Mapping |
| 10 | Sensory Evaluation for Quality control | |
| 11 | Examination for IFST Certificate in Sensory Evaluation: Intermediate level | Module Evaluation and UoN Exam Guidance/Practice |

Teaching Staff: Dr Rebecca Ford (MC), Prof Joanne Hort, Dr Ian Fisk, Emma Weston, Dr Qian Yang (Sensory Science Centre Manager), Helen Allen (Technician).

Assessment:

Exam 1 (60%) 1 hour

Coursework: Individual report (40%) 1500 words

Aims: Sensory quality of food is the key attribute in food acceptability. It provides pleasure and also plays a key role in delivering nutritious food in a palatable way. Food quality can be measured using sensory methods as well as instrumental measures of attributes like taste, aroma and texture. The aim of this module is to review the senses and the sensory methods employed by research and industry to measure sensory properties and the consumers' hedonic (liking) response. The importance of the correct data analysis and presentation will also be practiced and reviewed.

Learning Outcomes: On successful completion of this module, students will be able to:

- Review the human senses and their role in assessing the sensory properties of products
- Discuss the selection and training of individuals for inclusion on sensory and consumer panels.
- Describe, categorise and evaluate sensory and associated statistical techniques used to measure the quality of products
- Process, analyse interpret and present sensory data using appropriate analysis techniques

Recommended background reading:

Kemp S, Hollowood T & Hort J (2009) Sensory Evaluation: A Practical Handbook. Wiley Blackwell.

YEAR 3 MODULES

D235F1 The Microflora of Foods

Module Convenor: Prof CER Dodd Christine.Dodd@nottingham.ac.uk

Total Credits: 20

Level: 3 Autumn Semester

Capped module at 50: You will need permission from the module convenor to take this module unless it is compulsory for your course.

Pre-requisite(s): D224FA Microbial Mechanisms of Food Borne Disease (20 credit) or equivalent

Late registration for this module is not possible as coursework is submitted in the first two weeks.

Target Students: Compulsory for Food Science. Required choice option for students reading for degrees in Microbiology; optional for Nutrition, and Biotechnology.

Availability to Exchange Students: Yes

Module Details: The intrinsic and extrinsic factors which affect the growth of micro-organisms in foods will be considered. The impact of food structure and microflora will also be discussed. The limitations of these parameters for predicting the growth of micro-organisms will be considered together with commercially available predictive models and alternative safety assurance approaches HACCP. The micro-organisms associated with spoilage and the physical changes which occur in a food will be outlined. The microbial profiles of particular foods, including dairy products, fish and red meat, will be described and the changes that occur in the microflora during spoilage will be considered in relation to storage parameters. Practicals will cover methods for isolating and identifying micro-organisms from foods and will evaluate the limitations of these procedures.

Timetable: Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Lecture and practical content: The final timetable will be given out at the first session. An indicative timetable is given below

Week 1

10.00-13.00 Introduction to the module
Examining microbial growth in foods 1: factors controlling growth
Examining microbial growth in foods 2: predictive modelling
14.00-16.00 Canning practical 1

Week 2

10.00-12.00 Examining microbial growth in foods 3: enrichment procedures
Examining microbial growth in foods 4: *in situ* detection 12.00-13.00 *Salmonella* isolation: practical 1 - enrichment procedures
14.00-16.00 Canning practical 2

Week 3

10.00- 12.00 Spoilage The microflora of specific foods: meat and poultry I
12.00-13.00 Canning practical 3
14.00-16.00 *Salmonella* isolation: practical 2 - selection of isolates

Week 4

10.00-11.00 Practical

11.00-13.00 *Campylobacter* The microflora of specific foods: meat and poultry II

14.-00-16.00 *Salmonella* isolation: practical 3 - characterisation of isolates

Week 5

10.00-13.00 The microflora of specific foods: fish and shell fish *Clostridium botulinum* and food borne botulism. Prof Mike Peck (Institute of Food Research - Norwich)

14.00-16.00 Discussion group on *Salmonella* isolation Introduction to *Listeria* practical

Week 6

10.00-11.00 The microflora of specific foods: dairy products

11.00-13.00 *Campylobacter*: practical 1

14.00-16.00 Submission of *Listeria* protocol

Week 7

10.00-13.00 *Campylobacter*: practical 2

14.00-16.00 *Listeria* isolation: practical 1 – isolation from cheeses

Week 8

10.00-13.00 The microflora of specific foods: bakery products The microflora of specific foods: miscellaneous

14.00-16.00 *Listeria* isolation: practical 2 - selection of presumptives

Week 9

9.00-13.00 Competitive microflora. Dr. Tim Aldsworth (Coventry University) Food structure and microbial growth. Dr Sharon Johnson (DSTL) 14.00-16.00 *Listeria* isolation: practical 3 – confirmatory tests

Week 10

10.00 -13.00 HACCP: an introduction

Group exercise on HACCP

14.00-16.00 *Listeria* isolation: practical 4 - final identification

Week 11

10.00- 11.00 Bacterial suicide - a new hypothesis.

11.00-13.00 Discussion group on *Campylobacter* and *Listeria* practicals Seminar on past examination papers and module evaluation

Lecture Programme: Available on first day of module

Non Lecture Programme: Available on first day of module

Coursework: Course work constitutes 50% of the marks for the semester. This is broken down as:

| | |
|---|-----|
| Canning practical report | 25% |
| Continuous assessment exercises: | |
| Canning practical summary | 5% |
| <i>Campylobacter</i> identification results | 5% |
| <i>Listeria</i> isolation protocol (group exercise) | 15% |

Assessment Details:

| | | |
|--------------|-----|---|
| Exam 1 | 50% | 3 hour exam - compulsory data evaluation based on practicals; 3 short answer questions: 1 essay |
| Coursework 1 | 25% | Practical report written as report to industry - 2000 words |
| Coursework 2 | 5% | Group (2 people) practical report - summary of findings after 1 week (2 sides A4 max 500 words per student) |
| Coursework 3 | 5% | Group (2 people) practical report - tabulation of results and brief commentary written by pair working together (2 sides A4 max; 500 words per student) |
| Coursework 4 | 15% | Group (4 people) practical report - summary of protocol developed in practical sessions and of written instructions issued to a technician (1000 words per student) |

Learning Outcomes: On successful completion of this module students will be able to:

- 1) Comprehend the underlying principles of the factors which control microbial growth and their relevance in foods.
- 2) Relate the microbial composition of major food materials with the impact of food composition, storage and processing.
- 3) Apply a range of practical techniques and methodologies for isolation and characterisation of specific bacteria.
- 4) Design, carry out and evaluate appropriate tests or experiments to address fundamental microbiological problems in the food industry.
- 5) Collect, record and analyse data by making accurate observations and measurements and use appropriate methods for presentation.

Recommended Reading: M ft Adams and M O Moss (1995) *Food Microbiology* J M Jay
Modern Food Microbiology Fourth Edition Collins, Lyne and Grange *Collins and Lyne's Microbiological Methods* Seventh

D235F8 Personal and Professional Development for Food Scientists

Module Convenors: Dr Judith Wayte Judith.Wayte@nottingham.ac.uk and Emma Weston (Associated Professor) Emma.Weston@nottingham.ac.uk

Lecturers: Experts in professional development and speakers from industry

Module Details: Level 3 Autumn Semester, 10 credits

Pre-requisites: Participation in the tour of food manufacturing sites (end of the first year)

Co-requisite(s): Not open to exchange or study abroad students

Capped module at 35: You will need permission from the module convenor to take this module unless it is compulsory for your course.

Target Students: Food Science and Nutrition and Food Science Students

Summary of Content: This module provides specific training and learning opportunities to develop a range of key skills and competencies that improve employability prospects for the students, and their performance once in work.

Lecture Programme: Example:

| Week | SUBJECT | LECTURER |
|------|--|--|
| 1 | Introduction to the module Use | EW/JW |
| 2 | Personality Assessment | RS Careers Service |
| 3 | Making Job Applications & CVs | External e.g. Pepsico |
| 4 | Building Targeted CVs | Self Directed Learning |
| 5 | You and Your Career – 1 Career Planning | EW/JW Self-Directed Learning |
| 6 | Careers Launch Pad | Field Trip |
| 7 | Drop In 1:1 Appointments | EW/JW |
| 8 | The Interview Process I | External – e.g. recruitment consultant |
| 9 | The Interview Process II – Group Assessments | External – e.g. Tesco |
| 10 | Understanding the Job Market | External e.g. CFA |
| 11 | Module Review and Coursework Support | EW/JW |

Module Activities:

- Visit four food/drink manufacturing sites at the end of year 1 (2-day field trip) – attendance compulsory as part of the module
- Participate in a range of workshops, for example: CV and cover letter writing; application forms and interview techniques; career planning; aptitude tests

- Attend a field trip to an employment event
- Attend employer presentations
- Create online personal portfolio/profile

Assessment:

| | | |
|---------------|-----|--|
| Coursework 1 | 80% | A collection of 3 reflective logs and 1 Personal Development Plan. Reflections can be audio; video or 1-2 page written reports. Marked as per written assessments Pass/Fail. |
| Coursework 2 | 0% | Portfolio of 5 items that contains evidence of the acquisition and realisation of skills, and draws on activities scheduled throughout the course and promotes a high degree of reflective practice. Students can align with a range of specific career. |
| Participation | 20% | Attendance at 4 employer events / workshops outside of the module activities. |

Aims: To provide specific training and learning opportunities to prepare students for a range of careers on graduation and in successfully securing a job.

Learning Outcomes: On successful completion of this module students will be able to:

- Demonstrate a range of professional behaviours
- Synthesise their skills and capabilities into a targeted portfolio
- Evaluate their performance at networking, interviews and assessment centres
- Construct an action plan for Personal and Professional Development to build on strengths and develop areas of weakness.

D235FR Trends in Food Research

Module Convenors: Dr David Gray David.Gray@nottingham.ac.uk

Module Details: Level 3 Autumn Semester, 10 credits

Pre-requisite(s): D223F0 Manufacture of Food (40 credits)

Co-requisite(s): None.

Expected Number of Students Taking Module: 60

Target Students: Food Science' and 'Nutrition and Food Science' students.

Availability to Exchange Students: Yes – but limited numbers

Summary of Content: This module will expose final year students to research and development in a number of areas of current academic interest within the Divisions of Food Sciences and Nutritional Sciences. This includes: flavour science; properties of biopolymers; interfacial properties of selected materials; sustainable nutrition; salt reduction; engineering new food structures. Factors that initiate, shape, and direct this research, will be discussed and explored. Exercises in experimental design, statistical analysis and data presentation, along with insights into the process of carrying out an undergraduate research project will prepare students for their final semester.

Module Activities:

- Description of current research within food science (mini research symposia)
- Selection of research project (mid-semester)
- Write a research proposal based on the final year research project you have just selected
- Research skills tutorials

Timetable: Typically two one-hour timetabled sessions per week: sixteen hours of lectures, and three hours of tutorials with project supervisor; three hours dedicated to identifying all reagents/methods/equipment required for the research project in the Spring. Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Provisional Timetable for Trends in Food Research D235FR Autumn 2016

| Teaching Week | Date | Topic/Activity | Research Symposia/Tutorial Speakers/Organisers |
|---------------|--------------------------|--|---|
| 1 | Sept 29 th | Module Introduction | Tim Foster, David Gray, and Maria Benlloch-Tinoco |
| | | Innovative Manufacture/Product Design | Tim Foster |
| 2 | October 6 th | Biomaterials Approach to Sustainable Nutrition | David Gray |
| | | Reduction of Meat Consumption | Andy S. |
| 3 | October 13 th | Flavour Measurement and Perception | Ian Fisk |
| | | Sensory Science and Consumer Behaviour | Rebecca Ford |
| 4 | October 20 th | Food Engineering | Bettina Wolf |
| | | Biopolymers and Macromolecules | Steve Harding |

| <i>During this week you will prioritise, from a list, areas of research that interest you and that would form the basis of your final year project</i> | | | |
|---|---------------------------|---|--|
| 5 | October 27 th | Allocation of research areas to students; small-group tutorial with supervisor - finalise research title and start writing research proposal | All Project Supervisors |
| 6 | November 3 rd | Experimental Design | Rob Linforth |
| 7 | November 10 th | Science and Society Undertaking Independent Research – Extending use of library resources Gateway Building A07 Computer room 10:30 – 12:30 | Kate M. Jane Maltby |
| <i>During this week you will arrange a time with your project supervisor to discuss writing your project proposal</i> | | | |
| 8 | November 17 th | Statistical Analysis and Data Presentation | Darren/Neil/Maria |
| 12 noon Friday November 20th <i>Deadline to submit your Research Proposal</i> | | | |
| 9 | November 24 th | Writing your Project Dissertation as a Research Manuscript How to successfully navigate the research project: student-led tutorial | David Gray Previous final year students |
| 10 | December 1 st | <i>Identify methods/materials/reagents/access to kit/ etc. required for your research</i> | |
| 11 | December 8 th | Individual Tutorial with project supervisor - feedback on project proposal and discuss plan for experimental work | All Project Supervisors |

Module Structure:

1. Introduction

Factors that affect the direction of food related research (industry and academia)

2. Mini-Symposia on Current Research Activities

1. Innovative Manufacture/Product Design – Tim Foster
2. Sustainable Nutrition – David Gray and Andy Salter
3. Flavour Measurement and Perception – Ian Fisk
4. Sensory Science and Consumer Behaviour – Rebecca Clark
5. Food Engineering – Bettina Wolf
6. Biopolymers and Macromolecules – Steve Harding
7. Science and Society – Kate Millar

Format of Mini-Symposia

Organisers of the Mini Symposia can organise the sessions as they wish. The mini-symposia will introduce the students to particular areas of research and provide a platform to (to a greater or lesser extent):

- explain the driving forces that shape research in general, for example: personal interest; funding agency priorities; Government policy; industrial priorities

- provide insights into certain advanced technology/tools used in specific research areas
- debate/discuss issues at the interface of science and society

3. Assessment (Individual)

- Write a short research proposal (2000-2500 words) based on the research you have chosen for your final year project (Spring Semester). The proposal should set the scene of your work, offer a compelling case for the work to take place, and outline the methods that will be employed to meet the objectives. The research proposal needs to be well-referenced, and technical terms need to be defined. After justifying the work, you need to articulate an overall aim followed by a list of objectives that should include an indication of the experimental approach/methods you hope to employ.
- **Assessment Weighting:** 1x Written Research Proposal 100%

Marking Criteria for Research Project Proposal

See Marking Sheet at end of document

4. Reinforce Research Specific Skills

- Tutorials on literature searching, experimental design, statistical analysis, data presentation and manuscript/dissertation writing
- Student-led insights into the process of carrying out an undergraduate research project

Aims: To stimulate an interest in the importance of research in the field of Food Science, to explore the range of factors that shape this endeavour, and to reinforce skills required to successfully tackle the research project in the Spring Semester.

Learning Outcomes: On successful completion of this module, students will be able to:
Knowledge and Understanding

- Demonstrate an appreciation of the context for, and the driving forces that shape, research in food science

Intellectual Skills

- Devise a plan of work based on a particular area of research and/or development

Transferable/Key Skills

- Analyse and present data effectively
- Write a coherent research proposal
- Manage time efficiently and work to deadlines

D23BF2 Food Factory Operations

Module Convenors: Dr Ian Fisk Ian.Fisk@nottingham.ac.uk and Dr A Rosenthal Andrew.Rosenthal@nottingham.ac.uk

Lecturers: Prof T Foster, Dr B Wolf, Dr L Hewson, Mrs E Weston (Associate Professor), Dr J Jia, Dr A Swali, Dr S Price, Dr J Wayte, Dr N Doherty, Dr D Greetham, Dr KS Brown, Prof C Dodd.

Module Details: Level 3, Full Year, 20 credits

Pre-requisites: Compulsory Food Science stream route at Levels 1 & 2

Expected Number of Students Taking Module: 30

Target Students: Compulsory for students reading for a degree in Food Science. Not available to Exchange Students due to project work in year 2.

Target Students: Compulsory for students reading for a degree in Food Science.

Summary of Content: The influence of hygiene, quality and legislation on the manufacture of food will be addressed up to factory scale. Design and layout of factories for low and high risk foods will be explained with examples of Good Manufacturing Practice. Cleaning practices will be explained in terms of theory and in practical sessions using commercial cleaning equipment. The provision of services like steam and water (of the required quality) will be explained along with automation, particularly control using feedback loops. The legal constraints on food producers will be explained with reference to English and EC law, with input from enforcers (e.g. Environmental Health Officers and Trading Standard Officers) and related professionals. A product-development project where students will work as part of a team will provide opportunities to put these skills into practice.

Timetable: One four hour timetabled lecture session per week in the autumn term. One four hour timetabled practical session per week in the spring term (product development project). Personal timetables will be available to all students via www.nottingham.ac.uk/studentservices

Lecture Programme: Lecture programme is provisional and more detailed information will be given to you in the first session.

- 1 Introduction to Module, Manufacturing Strategies
- 2 Utilities, Special Factors in Food Production, Design of Food Hall
- 3 Management Structures in Factory Operations, Unit Operations
- 4 Production Control, Microbiological Testing for Product Development, HACCP
- 5 Patents and IP Management, Managing Innovation, Process Control
- 6 Food Factory Layout, Packaging
- 7 Sampling for Quality Testing, Cleaning Food Factories
- 8 Food Factory Audits, Specifications
- 9 NPD Programme, Roles of TSO/EHO
- 10 Securing Food Production for the Future, Business Planning, Food Law and Labelling
- 11 Module Evaluation and Revisions

Non-Lecture Programme: 45 hours are allocated for students to work in groups on a product development brief set by a member of staff. This culminates with the presentation of the product at the Product Development Exhibition and submission of a technical report.

Coursework: Product development presentation and technical report.

Assessment:

| | | |
|------------|-----|---|
| Exam | 25% | 2 hour examination (50% Multiple choice, 50% short answer questions) |
| Coursework | 75% | Presentation of product development project to staff and invited visitors – portfolio of work (2500 words), poster presentation and stand manned by the group for an afternoon. |

Aims: To make the student aware of a range of operations used in food manufacturing. Emphasis will be placed on the hygienic and legal requirements for the production of foods. The student, when working in a food factory, should have sufficient understanding to contribute, at managerial level, to a production team. The student should be able to contribute to the development of novel food products under factory time scales and limitations.

Learning Outcomes: To identify the key features required for the safe and profitable operation of food factories (factory design, services and legislation) • To compare design features and choose appropriate production approaches for the safe and profitable operation of food factories • To design a new food product and process in response to a defined brief within a short time frame • To present a new food product/food process (including marketing, packaging and production location).

Recommended background reading: Reading lists are provided by each staff member teaching in the module.

D23PRO Undergraduate Research Project

Module Convenor: Dr S Lydon Sussie.Lydon@nottingham.ac.uk

Total Credits: 40

Level: Level 3, Year-long module*

***For Food Science and Nutrition and Food Science the project runs Spring Semester**

Summary of Content: The project is a year-long level 3 module. The topic of the project will be chosen from a list of suggestions, and will be finalised after consultation with the student's Course Manager and a member of academic staff who will act as the supervisor. It involves detailed research on the topic chosen after discussion with the supervisor. Each project will involve collection of data by means such as experiment, questionnaire, observation and/or literature search as well as the analysis and interpretation of the data in the context of previous work. Reading and summarising previous research by other scientists working in the area, and writing a clear concise final report are essential components of the project.

Module details: This module consists of an extended programme of research under the direction of an individual member of staff. Students are expected to undertake a challenging piece of work, in which emphasis is placed on self-motivation and self-learning. Detailed guidelines will be provided by the Division.

Expected Number of Students Taking Module: 250

Target Students: All Biosciences students registered for Honours Degrees in the School of Biosciences apart from those studying Microbiology, and Environmental Sciences degrees.

Non-lecture programme: Private study using library, Internet, laboratory, or field facilities supported by regular tutorials with the project supervisor.

Target Students: All Biosciences students registered for Honours Degrees in the School of Biosciences apart from those studying Microbiology, and Environmental Sciences degrees.

Assessment: The module will be assessed by coursework only; this will take the form of a 15 minute oral presentation of the research findings (10%), an objective assessment of project planning and execution (30%) and a 5,000-word written report (60%). Details of the precise format required for the oral presentation and written report will be provided to students by the School Office.

Module aims: The module aims to provide a detailed training in research work. At the end of the module, students should be familiar with the relevant published literature in the field, have become familiar with some of the fundamental techniques necessary to do the prescribed research and published their findings as both an oral report and a comprehensive written report.

Module objectives: The objectives are to enable students to:

- i) Identify and analyse problems
- ii) Undertake good experimental design
- iii) Search for, analyse and interpret relevant literature
- iv) Carry-out competent laboratory, field or survey research
- v) Analyse data using appropriate methods
- vi) Write and deliver an oral presentation
- vii) Prepare and write a detailed report

Transferable skills

Transferable skills associated with this module include:

- i) Literature searching using a range of databases
- ii) Use of relevant laboratory, field or survey research methods
- iii) Statistical analysis as appropriate
- iv) Computing and word processing skills
- v) Problem solving
- vi) Oral communication skills
- vii) Time management

Subject specific information

In some project areas, it is necessary to begin project work in semester 4 because of factors such as seasonal availability of crops or farm animals. This phase of the project forms a discrete, 10-credit, Part I module.

30 Appendices

- 1 Qualitative Assessment Criteria - General Guidelines for Examinations
- 2 Qualitative Assessment Criteria - General Guidelines for Essays & Reports
- 3 Qualitative Assessment Criteria - General Guidelines for Posters
- 4 Qualitative Assessment Criteria - General Guidelines for Oral Presentations
- 5 Qualitative Assessment Criteria – Research Project Experimental Work
- 6 Progression and Compensation Charts
- 7 Marking at Different Levels within Degree Programmes
- 8 School of Biosciences Tutoring Statement

Appendix 1

| QUALITATIVE ASSESSMENT CRITERIA – GENERAL GUIDELINES FOR ESSAYS & REPORTS | | |
|---|-----|--|
| CLASS | % | |
| First | | |
| A1 | 100 | a. Excellent report structure with professional presentation of figures, tables, diagrams, references etc.; evidence of originality/novelty in presentation. |
| A2 | 90 | b. Deep understanding of subject; all arguments carefully developed and clearly expounded. |
| A3 | 80 | c. Considerable and effective use of literature information, beyond that supplied as taught material. |
| A4 | 73 | d. Clear evidence of critical thinking, originality and novelty. |
| Upper Second | | |
| B1 | 68 | a. Well organised report; appropriate choice of illustrative figures, tables, diagrams etc.; clearly presented throughout. |
| B2 | 65 | b. Sound grasp of subject material; generally logical arguments. |
| B3 | 62 | c. Reasonable evidence of wider study beyond lecture material. |
| | | d. Some evidence of independent thinking and originality. |
| Lower Second | | |
| C1 | 58 | a. Generally clear report conforming with accepted format but with some errors in style and/or omissions in presentation of illustrative figures. |
| C2 | 55 | b. Reasonable understanding of subject material, but some flaws in the logic of arguments and factual errors. |
| C3 | 52 | c. Only limited evidence of wider study and use of literature information. |
| | | d. Very little evidence of independent thinking or originality. |
| Third | | |
| D1 | 48 | a. Little attention given to report structure; limited use of illustrative figures, tables etc.; serious flaws in presentation. |
| D2 | 45 | b. Limited understanding of subject; considerable factual errors demonstrated. |
| D3 | 42 | c. Virtually no inclusion of literature information beyond lecture material. |
| | | d. Virtually no evidence of independent thinking or originality. |
| Soft Fail | | |
| E | 35 | a. Very poorly structured; disorganised; missing sections; minimal presentation of supporting data, figures etc. |
| | | b. Minimal understanding of subject; serious factual errors; general lack of any logical arguments. |
| | | c. Virtually no inclusion of literature information. |
| | | d. No evidence of independent thinking or originality. |
| Fail | | |
| F1 | 25 | Very poor coverage of material with little information that is relevant. |
| | | Virtually no evidence of understanding the question; minimal attempt to provide a structured answer. |
| Fail | | |
| F2 | 10 | A few lines of relevant material |
| Fail | | |
| F3 | 0 | No relevant material |

1. Only broad classes (A,B,C,D and E) have qualitative criteria attached; the division into (e.g.) C1, C2, C3 etc. is at the discretion of the examiner.
2. The qualitative criteria include consideration of :
 - a. The quality of the report/essay etc. - the use of sections; diagrams; figures etc.; citation of references; general neatness etc.
 - b. Student's knowledge of subject; depth and quality of answer.
 - c. Evidence of reading / study beyond regurgitation of standard taught material.
 - d. Independent or critical thinking / originality etc.

Appendix 2

| CLASS | % | QUALITATIVE ASSESSMENT CRITERIA - GENERAL GUIDELINES FOR EXAMINATIONS |
|--------------|-----|--|
| First | | |
| A1 | 100 | a. Deep understanding of subject; carefully balanced arguments clearly presented; all material highly relevant to the question. |
| A2 | 90 | b. Considerable and effective use of literature information, beyond that supplied as taught material. |
| A3 | 80 | c. Clear evidence of critical thinking, originality and novelty |
| A4 | 73 | d. Excellent structure and good use of illustrative diagrams etc.; evidence of originality/novelty in presentation. |
| Upper Second | | |
| B1 | 68 | a. Sound grasp of subject material; presentation of logical arguments relevant to the question. |
| B2 | 65 | b. Reasonable evidence of wider study beyond lecture material. |
| B3 | 62 | c. Some evidence of independent thinking and originality. |
| | | d. Well organised answer; appropriate use of illustrative diagrams; clear presentation. |
| Lower Second | | |
| C1 | 58 | a. Reasonable understanding of subject material, but some flaws in the logic of arguments and factual errors; possibly some irrelevant material. |
| C2 | 55 | b. Only limited evidence of wider study and use of literature information. |
| C3 | 52 | c. Little evidence of independent thinking or originality. |
| | | d. Fairly clear presentation; generally conforming with accepted format but with some flaws in style; little use of illustrative diagrams. |
| Third | | |
| D1 | 48 | a. Limited understanding of subject; numerous flaws in the logic of arguments; considerable factual errors and/or irrelevant material. |
| D2 | 45 | b. Virtually no inclusion of literature information beyond lecture material. |
| D3 | 42 | c. Virtually no evidence of independent thinking or originality. |
| | | d. Little attention given to structure; very limited use of illustrative diagrams; serious flaws in presentation. |
| Soft Fail | | |
| E | 35 | a. Minimal understanding of subject; serious factual errors; general lack of any logical arguments; considerable amount of irrelevant material. |
| | | b. Virtually no inclusion of literature information. |
| | | c. No evidence of independent thinking or originality. |
| | | d. Very poorly structured answer; disorganised and untidy; missing sections; virtually no use of illustrative diagrams. |
| Fail | | |
| F1 | 25 | Insubstantial answer; very poor coverage of material with little information that is relevant. Virtually no evidence of understanding the question and minimal attempt at structure |
| Fail | | |
| F2 | 10 | A few lines of relevant material |
| Fail | | |
| F3 | 0 | No relevant material |

- Only broad classes (A,B,C,D and E) have qualitative criteria attached; the division into (e.g.) C1, C2, C3 etc. is at the discretion of the examiner.
- The qualitative criteria include consideration of :
 - Student's knowledge of subject; depth, relevance and quality of answer.
 - Evidence of reading / study beyond regurgitation of standard taught material.
 - Independent or critical thinking / originality etc.
 - The quality of presentation - structure of answer, the use of sections, diagrams etc., general neatness etc.

Appendix 3

| CLASS | % | QUALITATIVE ASSESSMENT CRITERIA - GENERAL GUIDELINES FOR POSTERS |
|--------------|-----|---|
| First | | |
| A1 | 100 | a. Excellent use of headings, text appropriate size, figures and diagrams clear and well-labelled, very easy to follow progression of poster theme. |
| A2 | 90 | b. Visually very attractive and creative. |
| A3 | 80 | c. Factually very accurate and informative with clear evidence of extensive knowledge of published literature. |
| A4 | 73 | d. All relevant aspects of own data presented, where inclusion is appropriate. |
| Upper Second | | |
| B1 | 68 | a. Good use of headings, text of appropriate size, some loss of figure clarity or slight errors in labelling, easy to follow progression of poster theme. |
| B2 | 65 | b. Visually quite attractive and creative. |
| B3 | 62 | c. Factually accurate and informative with some evidence of knowledge of published literature. |
| | | d. Most relevant aspects of own data presented, where inclusion is appropriate |
| Lower Second | | |
| C1 | 58 | a. Adequate use of headings, text a little too small, figures not clear and inadequately labelled, more difficult to follow progression of poster theme. |
| C2 | 55 | b. Visually unstimulating. |
| C3 | 52 | c. Some factual inaccuracies with only limited evidence of knowledge of published literature. |
| | | d. Several aspects of own data omitted, where inclusion is appropriate. |
| Third | | |
| D1 | 48 | a. Very poor use of headings, text too small or hand-written, figures unclear and unlabelled, no obvious progression of poster theme. |
| D2 | 45 | b. Visually unattractive and dull. |
| D3 | 42 | c. Many factual inaccuracies with very limited evidence of knowledge of published literature. |
| | | d. Most of own data omitted, where inclusion is appropriate. |
| Soft Fail | | |
| E | 35 | a. No headings used and poster somewhat disorganised. |
| | | b. Visually unattractive and dull. |
| | | c. Inaccurate with virtually no evidence of knowledge of published literature. |
| | | d. None of own data included. |
| Fail | | |
| F1 | 25 | a. No headings used and poster very disorganised and difficult to understand. |
| | | b. Visually very unattractive and dull. |
| | | c. Inaccurate with no evidence of knowledge of published literature. |
| | | d. None of own data included. |
| Fail | | |
| F2 | 10 | A few lines of relevant material presented |
| Fail | | |
| F3 | 0 | No poster presented |

1. Only broad classes (A,B,C,D and E) have qualitative criteria attached; the division into (e.g.) C1, C2, C3 etc. is at the discretion of the examiner.

2. The qualitative criteria include consideration of :

- Structure and organisation of the poster.
- Visual impact and attractiveness.
- Accuracy and completeness of the content.
- Where appropriate, inclusion of students' own experimental data.

Appendix 4

| QUALITATIVE ASSESSMENT CRITERIA - GENERAL GUIDELINES FOR ORAL PRESENTATIONS | | |
|---|----------|---|
| CLASS | % | |
| First | | |
| A1 | 100 | a. Clearly audible, well-paced presentation delivered without obviously reading from notes in the time allocated. Addressed to the audience. |
| A2 | 90 | b. Very well-planned with a clear logical structure focused on the topic being presented. Excellent introduction and summary. |
| A3 | 80 | c. Excellent use of visual aids which are easy to read and understand. Main points of slides clearly explained. |
| A4 | 73 | d. Content of presentation very well-researched with relevant data where appropriate. Response to questions asked indicates thorough understanding. |
| Upper Second | | |
| B1 | 68 | a. Clearly audible, well-paced presentation delivered with some reading from notes in the time allocated. Mainly addressed to the audience. |
| B2 | 65 | b. Quite well-planned with logical structure focused on topic being presented. Good introduction and summary. |
| B3 | 62 | c. Good use of visual aids which are quite clear to read and understand. Good attempt to explain main points of slides. |
| | | d. Content of presentation quite well-researched with relevant data where appropriate. Response to questions asked indicates good understanding. |
| Lower Second | | |
| C1 | 58 | a. Audible presentation which may be too fast or too slow. Tendency to read from notes and to address floor or ceiling. May be outside time allocated |
| C2 | 55 | b. Some flaws in structure and not always focused on the topic being presented. Weak introduction and summary. |
| C3 | 52 | c. Adequate use of visual aids which are not always easy to read and understand. Little attempt to explain main points of slides. |
| | | d. Some omissions in literature research and little relevant data presented. Response to questions asked indicates incomplete understanding. |
| Third | | |
| D1 | 48 | a. Difficult to hear. Too fast or too slow. Read from notes and little attempt to address the audience. Outside allocated time. |
| D2 | 45 | b. Poorly-structured, rambling presentation which strays from topic being presented. Very weak introduction or summary. |
| D3 | 42 | c. Poor visual aids which are difficult to read and understand. Poor explanation of main points of slides. |
| | | d. Little evidence of literature research and no data presented. Response to questions indicates poor understanding. |
| Soft Fail | | |
| E | 35 | a. Mumbled, halting presentation. Much too fast or too slow. No attempt to address audience and well outside allocated time. |
| | | b. No discernible structure to presentation with some relevant material. No introduction or summary. |
| | | c. Very poor visual aids. No explanation of main points of slides. |
| | | d. Poor literature research and no data presented. Response to questions shows serious weakness in understanding. |
| Fail | | |
| F1 | 25 | a. Extremely difficult to hear presentation and well outside allocated time. |
| | | b. No discernible structure and very little relevant material. No introduction or summary. |
| | | c. No visual aids used. |
| | | d. Little evidence of research. Response to questions shows minimal understanding. |
| Fail | | |
| F2 | 10 | Very minimal attempt to give a presentation. |
| Fail | | |
| F3 | 0 | Failed to give a presentation. |

- Only broad classes (A,B,C,D and E) have qualitative criteria attached; the division into (e.g.) C1, C2, C3 etc. is at the discretion of the examiner.
- The qualitative criteria include consideration of :
 - Presentation of talk; audibility, speed, use of notes, addressed to audience, time keeping.
 - Organisation of talk; logical coherent progression with introduction and summary.
 - Use of visual aids; clarity and explanation of salient points.
 - Research and response to questioning; evidence of extensive reading, presentation of own data (where relevant), evidence of wider understanding.

Appendix 5

| CLASS | % | QUALITATIVE ASSESSMENT CRITERIA - RESEARCH PROJECT EXPERIMENTAL WORK |
|--------------|-----|--|
| First | | |
| A1 | 100 | a. Extremely independent and able to work with minimal direct supervision. Shows a great deal of initiative and perseverance when things go wrong. |
| A2 | 90 | b. Very well organised; able to plan time in laboratory/field with minimal assistance. |
| A3 | 80 | c. Technically extremely competent; learns new methods quickly with minimal training. |
| A4 | 73 | d. Excellent critical ability and able to appreciate limitations of techniques used. |
| Upper Second | | |
| B1 | 68 | a. Able to work independently with little direct supervision. Shows some initiative and perseverance. |
| B2 | 65 | b. Well organised; able to plan time in laboratory/field with little assistance. |
| B3 | 62 | c. Technically competent; learns new methods quite quickly when given training. |
| | | d. Some critical ability and appreciation of limitations of techniques used. |
| Lower Second | | |
| C1 | 58 | a. Needs quite close supervision and shows little initiative. Tendency to give up too quickly when things go wrong. |
| C2 | 55 | b. Quite well organised but needs considerable help to plan experiments and time spent in laboratory/field. |
| C3 | 52 | c. Technically quite competent, but liable to make mistakes is not supervised closely. Slow at learning new techniques. |
| | | d. Limited critical ability and little appreciation of limitations of techniques used. |
| Third | | |
| D1 | 48 | a. Little or no ability to work independently. Shows very little initiative. Liable to give up when things go wrong. |
| D2 | 45 | b. Poorly organised; unable to plan time in laboratory/field without direct instruction. |
| D3 | 42 | c. Technically incompetent. Liable to make mistakes even when supervised closely. Very slow at learning new techniques. |
| | | d. Virtually no critical ability or appreciation of limitations of techniques used. |
| Soft Fail | | |
| E | 35 | a. No ability to work independently. Minimal effort put into work. |
| | | b. Poorly organised and liable to miss planned work sessions. |
| | | c. Technically very incompetent. Often makes mistakes, even when closely supervised. Extremely slow at learning new techniques. |
| | | d. No critical ability or appreciation of limitations of techniques used. |
| Fail | | |
| F1 | 25 | a. Rarely does any experimental work. |
| | | b. Very likely to miss planned work sessions. |
| | | c. Often makes errors when carrying out simple procedures. |
| | | d. No critical ability or appreciation of limitations of techniques used. |
| Fail | | |
| F2 | 10 | Very minimal laboratory/field work attempted. |
| Fail | | |
| F3 | 0 | No laboratory/field work attempted |

- Only broad classes (A,B,C,D and E) have qualitative criteria attached; the division into (e.g.) C1, C2, C3 etc. is at the discretion of the examiner.
- The qualitative criteria include consideration of :
 - Independence and initiative. Perseverance when work does not go according to plan.
 - Organisational ability; can the student plan their use if time effectively and efficiently?
 - Technical ability; can the student carry out work competently and learn new techniques quickly
 - Critical ability and appreciation of the limitations of the work.

Progression and Compensation BSc Hons (to Parts I and II) and MNUtr (to Part I)

Appendix 6

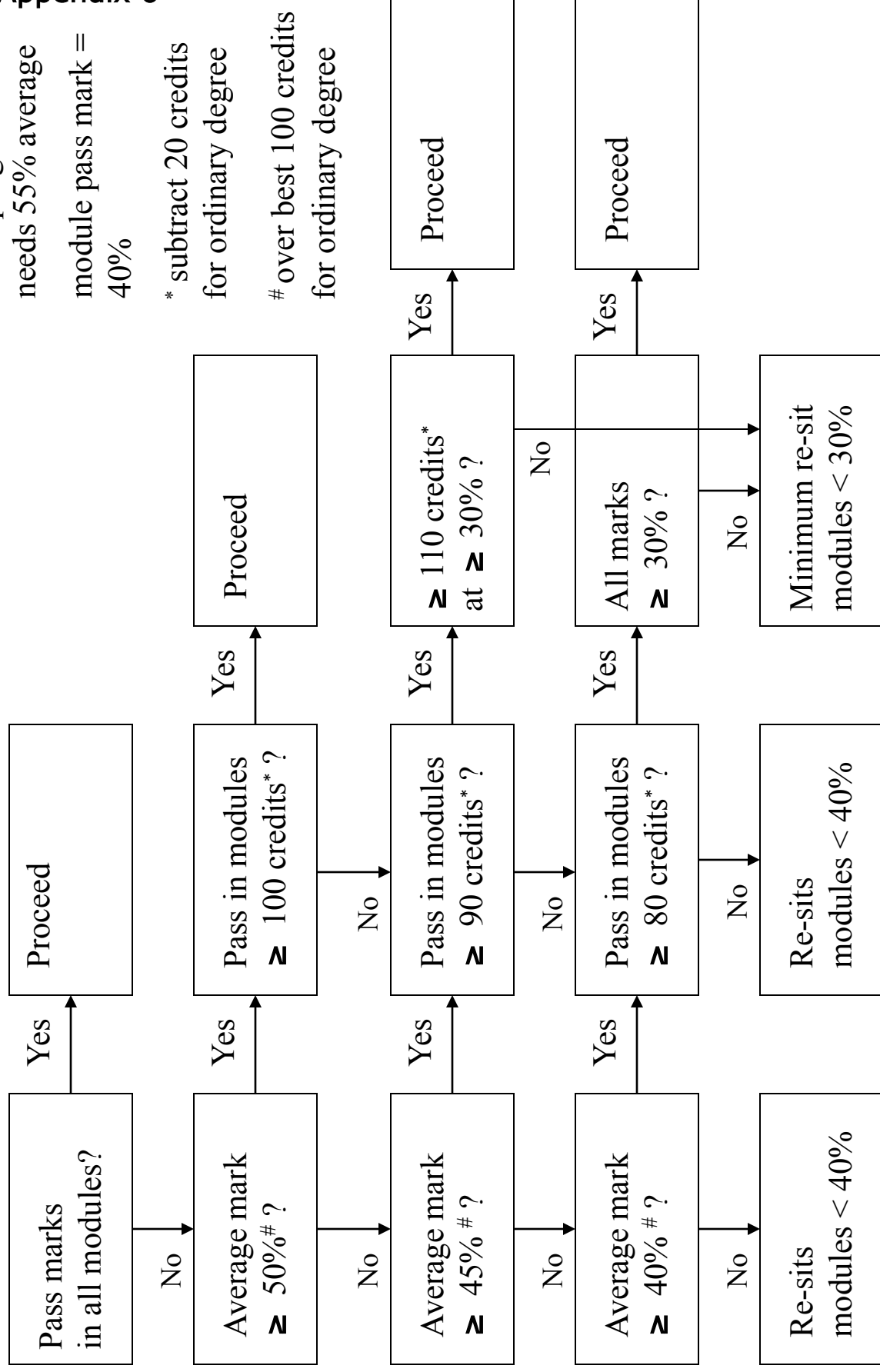
MSci prog to Part II

needs 55% average

module pass mark = 40%

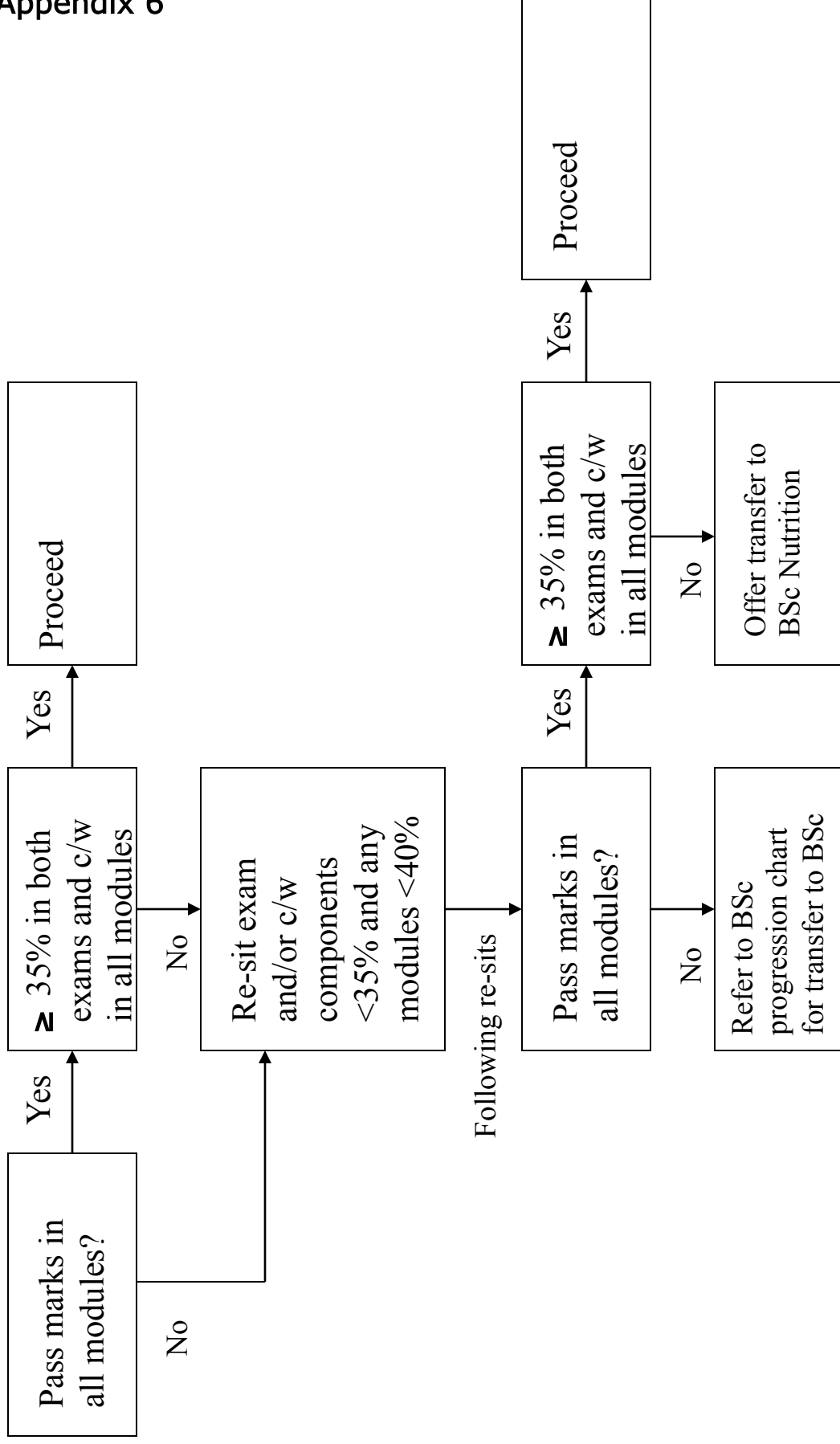
* subtract 20 credits for ordinary degree

over best 100 credits for ordinary degree



Progression and Compensation MNutr (to Parts II and III)

Appendix 6



Appendix 7

School of Biosciences Qualitative Marking Schemes Supplementary Guidelines

Marking at Different Levels Within Degree Programmes

The School's qualitative marking schemes provide general guidance for assessment of various types of work. However, in applying these schemes to individual assessments, account must be taken of the level at which students are working. The criteria outlined below provide general guidance, and not all criteria will be applicable to all forms of assessment.

Academic Levels

- Level 1** Certificate level, generally qualifying year students
- Level 2** Diploma level, generally taken by year 2 students
- Level 3** Degree level, generally taken by year 3 students
- Level 4** Masters levels, generally taken by post-graduate or year 4 undergraduate students

Major considerations

Mark Class A

- Level 1:** Draws on available evidence to make sound conclusions supported from a range of sources.
- Level 2:** There is evidence of further reading and careful analysis offering alternative views.
- Level 3:** There is critical analysis offering alternative views. There is clear expression of own views, which are supported by appropriate literature. Draws on available evidence to make persuasive conclusions.
- Level 4:** Detailed, orderly and critical work with clearly specified focus/foci exhibiting rigorous analysis, synthesis and evaluation. There must be evidence that the student has developed their own arguments.

Mark Class B

- Level 1:** Content is accurate and relevant with appropriate use of supporting material.
- Level 2:** There is sound analysis with good expression and argument with evidence of independent thinking supported by appropriate material.
- Level 3:** There is sound critical analysis. Alternative views are expressed using supporting evidence from a variety of sources.
- Level 4:** Evidence of originality and significant critical analysis. There is evidence of integration of material from a variety of sources.

Appendix 7

Mark Class C

- Level 1:** Content is largely accurate and relevant with some evidence of understanding.
- Level 2:** There is adequate analysis with limited evidence of wider study.
- Level 3:** There is reasonable understanding, with some attempt at analysis and limited use of supporting material.
- Level 4:** There is reasonable understanding and analysis supported by a range of relevant evidence.

Mark Class D

- Level 1:** Some relevant content but with evidence of only very limited understanding.
- Level 2:** Some relevant content with limited understanding but little evidence of wider study.
- Level 3:** Basic understanding with limited evidence of wider study.
- Level 4:** Basic understanding with limited evidence of understanding and some attempt at analysis.

Mark Classes E/F

- All levels:** Work does not demonstrate above criteria and reference should be made to the qualitative criteria in deciding final mark.

Modules offered at levels A-C are considered intermediate between Levels 1-2, 2-3 and 3-4 respectively.

School of Biosciences: Tutoring Statement

The following statement demonstrates how each of the specific outcomes of the University's principles of tutoring are delivered in the School of Biosciences.

| Principle | Outcome achieved in Biosciences through . . . |
|---|--|
| 1. The student should feel acknowledged, recognised and accepted within their school/department as an individual with distinct academic needs and preferences. | <p>A detailed Week One programme incorporating course-specific teaching and learning support sessions.</p> <p>A specific Course Manager for each degree from whom students can obtain individual academic advice.</p> <p>Module registration days (three times/year) when students can obtain individual academic guidance on their module choices.</p> <p>Each student is allocated a personal tutor and this is one of the first people they meet when they arrive in the School.</p> |
| 2. The student should feel part of the school/department community , experiencing frequent contact with academic staff on an individual or small group basis and building relations with particular members of staff over an extended period.* | <p>Three formal meetings with tutors/year, in addition to which students are encouraged to meet mid-semester with their personal tutors.</p> <p>Learning Community Forum deals with all issues affecting campus life (eg social, residential and catering) as well as academic issues.</p> <p>Close working relationship developed with project supervisor during final year of studies.</p> <p>Student Guild – an SB-based branch of the Students' Union which has combined social and representational roles.</p> <p>Semester One tutor appointed to give particular assistance to first year students at the start of their course. Semester One discussion group at end of first semester to seek feedback on students' experiences.</p> <p>Most first year students and many from later years reside in Bonington Hall. The Hall is closely integrated with all aspects of Campus and School life and is central to the SB community.</p> <p>Campus-based alumni organisation (OKA) provides continuity for graduates and is also involved with travel awards, fund-raising, communication and development.</p> |

| | |
|---|--|
| <p>3. The personal development of the student should be promoted; leading to improved communication skills and greater confidence in presentation and dealing with the unfamiliar.</p> | <p>Many modules require presentations, group working and practical skills to be developed – see: http://www.nottingham.ac.uk/biosciences/study-with-us/employability/employability-skills.aspx.</p> <p>Final year research project involves significant personal development as an individual researcher and scientist. MSci students take undertake an additional project in which their professional skills are further developed. MNutr students undertake clinical placements giving them first-hand experience of communicating with the public.</p> <p>Project assessment includes an oral presentation.</p> |
| <p>4. Students should receive prompt, helpful and detailed feedback on their assessments, in a manner that enhances learning and improves future assessment performance.</p> | <p>Coursework returned to students (within a 21 day turn-around time) with individual comments – often on a standard assessment feedback form. Models of good practice in feedback are provided on School intranet.</p> <p>Standard module feedback which is provided at the end of each module on performance over the course of the module, including the formal summative assessment.</p> <p>Module timetables routinely specify submission and feedback dates for coursework.</p> |
| <p>5. Students struggling with aspects of individual modules, or more generally with their programme of studies, should have clearly signposted and ready access to a reasonable level of academic advice and support designed to remedy their difficulties.</p> | <p>Guidance available from Course Manager, Module Convener, Module Registration Days, Personal tutor and School Office staff.</p> <p>Colleagues from Academic Support hold drop in sessions on campus throughout term-time.</p> <p>In 2014-15, appointment of a new Student Experience and Support Officer.</p> |
| <p>6. Students should receive the level of support in developing their study skills necessary to perform satisfactorily on their programme of studies.</p> | <p>A well-developed Study Skills Handbook, to which students are introduced during a specific session in Week One. Personal tutors also provide study-skill advice.</p> <p>A year-long Academic Development and Employability module delivered to first year students.</p> <p>Provision of self-assessment materials from the Virtual Writing Centre for students' use.</p> <p>Course staff provide specific aspects of guidance, especially in relation to coursework.</p> |

| | |
|--|--|
| | <p>All students receive detailed Module Handbooks appropriate to all years of their course. Year 2 and 3 students receive a detailed Research Project handbook. Information in these documents is explained and reinforced during discussions with Personal Tutors, project supervisors and module staff.</p> |
| <p>7. Students with personal circumstances adversely affecting their studies should feel able to make these known to the school/department without difficulty and to be directed to the appropriate support service.</p> | <p>Personal tutor, the School's Senior Tutors (undergraduate or postgraduate), any other member of academic staff, and/or School Office staff who are available to talk to students about difficulties facing them. All staff are aware of support mechanisms available such as the Student Services Centre and Counselling Service.</p> <p>A well-publicised extenuating circumstances procedure, which students are encouraged to make use of as appropriate.</p> <p>The Student Experience and Support Officer who provides support for students with extenuating circumstances.</p> |
| <p>8. Students should receive the necessary careers information, advice and guidance to equip them to make informed choices about their future, to understand the options open to them, and to take advantage of available opportunities.</p> | <p>Workshops on taking an industrial placement year, CVs and application forms, mock assessment workshops are run by Careers and Employability Service during the Autumn Semester. In addition, regular employer presentations from relevant business are hosted on campus throughout each year.</p> <p>Additional drop-in clinic for CV feedback offered to finalist students in June each year.</p> <p>Careers appointments available on the Sutton Bonington Campus throughout the year.</p> <p>2014-15 a new Careers Fair held on campus in February.</p> <p>MSc mentoring scheme for interview skills/CV development.</p> <p>Some modules deliver integral employability skills.</p> <p>Guidance from tutor, PhD supervisor/assessor and external lectures.</p> |
| <p>9. Students should be made aware of the importance of developing and articulating their employability skills, including possible participation in the Nottingham Advantage Award.</p> | <p>Course and subject area staff provide guidance on opportunities in their own disciplines or facilitate connections with specialist resources/alumni/industrial partners/research organisations.</p> <p>Some subject areas promote placement opportunities directly; an Industrial Placement Officer provides general employment advice and opportunities for year-long internships</p> |

| | |
|---|---|
| | <p>Personal tutors provide general employment guidance.</p> <p>Additional School Placement Officer to be recruited for start of 2015-16.</p> <p>Personal tutors, project supervisors and other staff provide referee statements to support employment applications.</p> <p>Introduction to the Nottingham Advantage award given during formal Week One Induction programme and students supported to achieve this.</p> <p>Integral employability skills built into the second year and MSc curriculums.</p> |
| <p>10. Students should receive appropriate advice and support when considering changing their programme of study or contemplating leaving the University.</p> | <p>The following sources of advice and support are available to students considering changing their course of study or withdrawing from the University: Personal Tutor, Course Manager, School Manager (Academic Administration), Student Services – financial team.</p> <p>These resources are detailed in the Study Skills book.</p> |
| <p>11. Students should be prepared for periods of study away from their home campus and appropriately supported during those periods.</p> | <p>Students receive general information during Week One induction about the possibilities for study abroad. Students following specific courses where placement is a recognised option or obligation receive guidance and support from course staff and from the ERASMUS and Study Abroad Coordinator, and Industrial Placement Officer. Students undertaking a period of study at the Malaysian campus are provided with School briefing prior to departure. The provision of continued support for students who are studying away is a defined responsibility of personal tutors.</p> |
| <p>12. The procedures for submitting extenuating circumstances regarding assessments should be straightforward and well publicised.</p> | <p>Information about the extenuating circumstances process which is provided to all students through the Study Skills Handbooks. This is articulated to students during Week One induction.</p> <p>Reminders about how and when to submit extenuating circumstances which are sent to students twice/year.</p> <p>Tutors, Course Managers and Student Experience and Support Officer who are all able to give advice and support to students with extenuating circumstances.</p> |

| | |
|--|--|
| 13. Students with disabilities should be clear as to the support they will receive and where it is available, and the support should be in line with University policies. | <p>The Study Skills Handbook which gives information about support available for students with disabilities. This is articulated during Week One by the Disability Liaison Officer (DLO) who gives a presentation to all new students. The DLO provides support to students throughout their course, and directs students to relevant support services.</p> <p>Tutors who are trained to deal with students with disability.</p> <p>A close working relationship which is maintained between the School's DLO and the University's Senior Disability Officer, who is available on the Sutton Bonington campus once/week.</p> |
| 14. The procedures for submitting academic appeals and complaints should be well publicised and staff should be aware of their responsibilities within these procedures. | <p>The process for submitting academic appeals and complaints which is publicised in the students' Study Skills Handbooks and Course Handbooks.</p> <p>The School Manager (Academic Administration) who gives advice and support to students who wish to submit a complaint or an appeal.</p> <p>Guidance available from tutors and Course Managers.</p> <p>Learning Community Fora provide an opportunity for complaints to be resolved informally.</p> |
| 15. Students being subjected to the academic offences procedure should receive clear information and advice. | <p>Information about what constitutes plagiarism and how to avoid it which is provided in the students' Study Skills Handbooks and Course Handbooks. This information is articulated in a dedicated session during Week One.</p> <p>On-going guidance on how to avoid plagiarism provided by module conveners and tutors.</p> <p>Personal tutors and the School Manager (Academic Administration) who give support for students being subjected to the academic offences procedure.</p> |
| 16. Students should receive relevant health and safety guidance, especially in laboratory or workshop-based subjects. | <p>General information on health and safety is provided to all students during Week One induction and in the School's Study Skills Handbooks. Specific information related to laboratories and practical classes is included in module documentation. Students' attention is drawn to safety matters, including risk assessments and safety procedures, by individual course staff at times appropriate to their application. Some courses, such as those where pathogens will be used, contain a compulsory lab safety module.</p> |
| 17. Students should be directed in a timely and appropriate manner to | <p>The School's Study Skills Handbooks, Course Handbooks, Personal Tutor, Senior Tutor,</p> |

Appendix 8

| | |
|---|--|
| University support services for assistance with all of the above matters as necessary. | School Office staff and the Student Services Centre. |
|---|--|

The student Study Skills book is produced annually and provided in hard copy to all new students. It can also be found online at <http://www.nottingham.ac.uk/~sazintra/student/current/docs/Biosciences%20Study%20Skills%20-%20updated%20July%202014.pdf>

January 2015