

**LTC14D195**

**Title:** *SCI LTQC Course Approval – Mathematics with a Year in Industry*  
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**Version:** Final Version  
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**Issue**

To approve a new course approval for SCI BSc Mathematics with a Year in Industry from the Faculty of Science, Learning and Teaching and Quality Committee.

**Recommendation**

Approval of the course proposal.

**Resource Implications**

See comments in course proposal.

**Risk Implications**

None.

**Equality and Diversity**

See comments in course proposal.

**Timing of decisions**

SCI LTQC approved (subject to minor amendments) on 29/04/15 and then by Chairs action 01/05/15. New course to be introduced for 2016/17.

**Further Information**

Contact details: Carole Bull, Learning and Teaching Coordinator, telephone 01603 593217, email: c.bull@uea.ac.uk, for any queries/further information relating to this document.

**Background**

N/A

**Discussion**

**Attachments** Course Proposal.

# FULL COURSE PROPOSAL FORM

(taught programmes only)

for **NEW COURSES** and  
**COURSE AMENDMENTS**  
with **RESOURCE IMPLICATIONS**

Please refer to the course proposal Procedure and Guidance CP-2013 to complete this or any other course proposal form: to ensure the correct form is being used; for information on early considerations and timescales; for general guidance on the course approval process; and for notes on completing the form.

Course Title(s)		new course? <i>note 1</i>		If no, please give existing course code	
Mathematics with a Year in Industry		Y			
School(s) of study & Faculty					
Mathematics, Science Faculty					
Proposer & proposer's school					
Dr Paul Hammerton, MTH					
Proposed start date (of new course or of changes)					<i>note 2</i>
September 2016					
This proposal requires: <i>note 3</i>		Prior approval by Council		Y	N
		Prior approval by LTC		Y	N

This form is in 5 parts:

- Part 1**            **Summary and Rationale**
- Part 2**            **Business Case**
- Part 3**            **Academic Case including Programme Specification**
- Part 4**            **Key Information Set (KIS) data**
- Part 5**            **Approvals and Notification**

The initiator is responsible for completing parts 1-4

## FULL COURSE PROPOSAL

## Part 1 SUMMARY AND RATIONALE

Course One			
<b>S1</b>	<b>a</b>	<b>SCHOOL(S) OF STUDY</b>	MTH
<i>note S1c</i>	<b>b</b>	<b>FACULTY or FACULTIES</b>	SCI
	<b>c</b>	<b>JOINT COURSE?</b> (ie owned/taught by more than one School)	<b>YES</b>
			<b>NO</b> ✓
	<b>d</b>	<b>NAME OF COURSE DIRECTOR</b> (Home School)	The Programme Director with overall oversight is Dr Ben Milner (SCI AD LTQ)  <b>Course Director will be</b> <b>Dr Paul Hammerton</b> <b>(provisional)</b>
	<b>e</b>	<b>NAME OF DEPUTY COURSE DIRECTOR</b> (partner School, for Joint Courses only)	N.A.
<b>S2</b> <i>note S2a</i>	<b>a</b>	<b>COURSE TITLE</b>	Mathematics with a Year in Industry
<i>note S2b</i>	<b>b</b>	<b>COURSE CODE</b>	G10(x – tbc)
<i>note S2c &amp; S2d</i>	<b>c</b>	<b>AWARD</b>	<b>BSc</b>
	<b>d</b>	<b>EXIT AWARD(S) AND TITLE(S)</b>	Possible exit awards: i) Certificate of Higher Education: to students who have successfully completed 120 credits at level 4 or above, at least 60 of which were completed at UEA. (ii) Diploma of Higher Education: to students who have successfully completed 240 credits, at least 100 of which are at level 5 or above, and at least 120 of which have been completed at UEA.
	<b>e</b>	<b>FULL/PART-TIME (please specify)</b>	FULL-TIME
	<b>f</b>	<b>LOCATION (UEA Norwich, UEA London, Distance Learning)</b>	UEA Norwich.
	<b>g</b>	<b>AVAILABLE FROM:</b>	September 2016
<b>S3</b> <i>note S3a</i>	<b>a</b>	<b>PROFESSIONAL AWARD (if any)</b>	N/A
	<b>b</b>	<b>ACCREDITING/VALIDATING BODY (if relevant)</b>	N/A

<i>note</i> S3b	<b>Website (URL)</b>				
	<b>Date when accreditation/ validation may take place</b>		N/A		
<b>S4</b> <i>note</i> S4	<b>LEVEL</b>	Sub-degree (e.g. Cert. Dip.)			
		Undergraduate			Yes
		Integrated Masters			
		Masters			
		Other postgraduate (please specify)			
<b>S5</b> <i>note</i> S5a	<b>a</b>	<b>DURATION</b> (years or months)		Four Years	
<i>note</i> S5b	<b>b</b>	<b>MODE OF ATTENDANCE</b> (full-time, part-time, distance, other)		Full-time	
<b>S6</b> <i>note</i> S6	<b>PLACEMENT(S)/WORK-BASED LEARNING REQUIRED</b>			YES    ✓    NO	
	If YES, does this conform with the UEA's code of practice on placements?			Yes	
<b>S7</b> <i>note</i> S7	<b>RELEVANT SUBJECT BENCHMARK STATEMENT(S)</b>			To conform with the benchmarking standard for Mathematics, Statistics and Operational Research (MSOR) laid down by the Quality Assurance Agency for Higher Education.	
<b>S8</b> <i>note</i> S8	<b>ENTRY REQUIREMENTS</b>			GCSE English language and Mathematics (or equivalent) at a minimum of Grade C.  The typical offer for students studying A levels will be as G100.  Applications are welcome from NVQ level 3.	
<b>S9</b>	<b>JACS Subject Level Code(s)</b> To be completed by the Planning Office following approval of the Business Case				
<b>S10</b>	<b>UCAS ADMISSION CODE / COURSE CODE</b> To be completed by the Planning Office following approval of the Business Case				
<b>S11</b> <i>note</i> S11	<b>FURTHER INFORMATION</b> available via...			<a href="mailto:P.Hammerton@uea.ac.uk">P.Hammerton@uea.ac.uk</a>	
<b>S12</b>	<b>COURSE HIGHLIGHTS</b> (for publication in University Prospectus / Website / other publicity) <b>N.B.</b> Please include employability prospects/career possibilities				

note S12	<p>Mathematics plays a central role in many aspects of modern life, providing the language and techniques to solve problems across a huge spectrum of disciplines. We provide you with these vital technical skills and theory, while encouraging you to develop a deep appreciation of mathematical knowledge. The project component of our courses helps develop your ability to communicate this knowledge to others.</p> <p>By choosing to study mathematics at UEA, you will be joining some of the most satisfied students in the country. In the National Student Survey, the School of Mathematics has consistently featured in the top ten mathematics departments in the country. In the 2014 survey, we received a rating of 96% for overall student satisfaction.</p> <p>Many organisations are keen to employ UEA mathematics graduates for their ability to analyse problems, formulate questions and find solutions. By undertaking an industry placement in your third year you will gain insight into the practical application of a mathematics degree in a working environment. Furthermore, you will gain essential employability skills from your experiences that will prepare you for your future career upon graduation.</p>
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*\*\*\*\*Please copy and paste the above table for additional (related) courses\*\*\*\**

<b>S13</b>	<b>RATIONALE FOR PROPOSAL</b>
note S13	<p>Please explain why you are proposing this/these new course(s) or these course amendments, and why this proposal is being offered at this time. See guidance notes for further indication of what to include in this section.</p> <p>Mathematics is the only school in the Science Faculty that does not offer an industry year out as part of its course. By introducing Mathematics with a Year in Industry this allows Maths students the same opportunities regarding employability and real-world workplace experience that students in the other schools currently undertake.</p> <p>In the past prospective students have expressed the desire for such a course variant to exist, and with employability and destination on leaving higher education being key performance metrics that the University wishes to enhance, any course proposal that enhances these institutional priorities should be supported.</p> <p>BIU research shows that the providers of industry placements for Mathematics students cover a wide range of industry backgrounds, including accountancy firms, banks, pharmaceutical companies, local and national government agencies, retail and electronics. Given the broad spectrum of employers that have supported placements at other HE institutions, it is felt that UEA students of Mathematics should be given the same opportunity to pursue an industry placement. Furthermore, in consultation with Careers (Isla Hosking) a strategy of exploring existing employer links and fostering new placements through alumni means Mathematics students will have the University's guidance and support in sourcing a placement.</p>

## FULL COURSE PROPOSAL

### Part 2 BUSINESS CASE

*note BC*

<b>BC1</b>	<b>ACADEMIC AND RECRUITMENT STRATEGY</b>	Consult with HOS, Faculty Dean, PLN, ARM (including Admissions)	
<b>BC1.1</b>	<b>How does the proposal fit with the University's Corporate Plan?</b>		
<i>note BC1.1</i>	The University's drive towards improving Careers and Employability fits perfectly with the Year in Industry programme variant. Students will undertake a placement for one year with a UK-based company, giving them the opportunity to enhance key employability skills (communication, professionalism, self-confidence) and learning in a workplace environment. The experience then provides a student's C.V. with an invaluable advantage which puts them in good standing for better career prospects after graduation. As has been experienced in other schools within Science, the success of industry placements has seen many students returning to their placement provider after graduation. Placements therefore provide a secure source of employment for our graduates.		
<b>BC1.2</b>	<b>Proposed Recruitment Strategy</b>		
<i>note BC1.2</i>	There are two strands to the recruitment strategy. Firstly, to advertise the industry variant to current students who have either enquired about an industry placement before or who may then consider the year in industry knowing that the option now exists. Secondly, with approval the course can be promoted from the Summer 2015 open days onwards, through course programmes, flyers, industry talks, and the University webpages. Raising awareness of the Industry course within Mathematics will further raise the profile of the school with students and employers alike.		
<b>BC1.3</b>	<b>Partnership and commercial sensitivity</b>		
<i>note BC1.3</i>	<b>Has this proposal, in outline, been approved by the Partnerships Office?</b>	<b>YES</b>	YES
		<b>NO</b>	
	<b>Please paste their comments below</b>		
	No comments from Partnerships Office		

<b>BC2</b> <i>note BC2</i>	<b>MARKET RESEARCH</b>	Consult with Market Research team	
<b>BC2.1</b>	<b>What other and type of institution offers identical and/or similar courses in the UK?</b>		

	Research undertaken by the BIU identified 31 universities, ranging across the HEI sector, which also offer Mathematics (G100) with the year in industry course variant.	
<b>BC2.2</b>	<b>Are there any likely international competitors?</b> (Please give brief details)	
	No	
<b>BC2.3</b> <i>note</i> BC2.3	<b>What is the annual number of applicants currently applying nationally for similar courses, and what are the entry requirements for these competitor courses?</b>	
	<p>The entry requirements from UEA's three closest competitors in Mathematics with a Year in Industry are as follows:</p> <p>Loughborough: AAB Kent: AAB Bath: A*AA</p> <p>G1 data provided by UCAS supports a healthy national demand for Mathematics courses:</p> <p>2010 – 7,276 2011 – 7,632 2012 – 7,311 2013 – 7,685</p>	
<b>BC2.4</b>	<b>What is the evidence for current and future demands for the course from potential students?</b>	
	<ul style="list-style-type: none"> <li>• <b>employers (public services, private sector, the professions etc.)</b></li> </ul> <p>Staff Student Liaison Committee (SSLC) for the school of Mathematics, meeting 11/02/2015, provided feedback to the course proposal that was positive and supportive of the course variant. There has also been direct demand for an industry course within Mathematics from prospective students during visit days.</p> <p>As demonstrated by the BIU research and DHLE 2012-13 return, employers of Maths graduates are numerous and wide-ranging. Any graduate with industry experience, who therefore has a proven record of their abilities in a workplace environment, will have a natural advantage over graduates without experience and will be more in demand of prospective employers. Current students, who have undertaken internships and industry placements, have returned to work for the same company after graduation.</p>	
<b>BC2.5</b>	<b>Can current and projected demand be met from existing provision?</b>	
	<b>Nationally:</b>	Yes, the new course will meet the demand.
	<b>Regionally:</b>	Yes the new course will meet the demand.
<b>BC2.6</b>	<b>Where is/what are the competitive advantage(s) for UEA?</b>	
	Enabling students to be ready for the workplace via an industry placement will feed directly into key employability and destination of leavers from HE metrics,	

	thereby strengthening the position of Mathematics as a subject area, raising its profile within national league tables, and encouraging future recruitment.
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<b>BC3</b> <i>note</i> BC3	<b>MARKET DEMAND AND RECRUITMENT</b>	Consult with Careers and Employability team
<b>BC3.1</b>	<b>What graduate career opportunities may be available?</b>	
	<p>SCI Faculty are currently implementing a strategy to develop an Employment Skills Award {after pilot} linking to academic advisor support. We will ensure that this cohort is given early opportunity to work with CCEN and the skills award to develop potential skills.</p> <p>MTH (G1) graduate employability has been improving with 2012-13 DLHE survey Graduate Prospects cited at 78.4% (against institutional average of 70.4%) and the School is aware of this metric as a key area for focus. Promoting an understanding of the kinds of employment opportunities that are available to MTH graduates will be developed through CCEN run and School run events.</p> <p><b>DHLE national survey 2012/13 – the wider picture for MTH graduates</b></p> <p>The average full-time mathematics graduates salary ranged from £17,140-£26,840 MTH graduates are more likely to enter further study (22.7%) compared to graduates from all subjects (12.4%) Over a third (37.7%) of MTH graduates in the UK were working as business, HR and finance professionals.</p> <p>The list of sample organisations that employ graduates with mathematical skills is extensive. The following areas are cited by maths careers (<a href="http://www.mathscareers.org.uk">www.mathscareers.org.uk</a>):</p> <p>Accountancy/Aerospace and Defence/Automotive/Biosciences/Business Support Services/Chemicals/Construction/Consultancy/Education/Engineering/Environment /Ecloration Geophysics/Financial Services/Food &amp; Drink/Government/Healthcare/Insurance/IT &amp; Computing/Manufacturing/Media/Metals and Minerals/Operational Research/Pharmaceuticals/Recruitment/Academic Research/Science/Telecoms/Transport/Travel/Utilities.</p>	
<b>BC3.2</b>	<b>Who (externally) has been consulted about the proposals (e.g. Professional Associations, employers' groups, PSRBs)?</b>	
	The degree programme is not accredited at present. Please see BC3.1 for comments from CCEN.	

<b>BC4</b> <i>note</i> BC4	<b>STUDENT NUMBERS AND TUITION FEES</b>	Consult with HOS, PLN, Faculty Dean, FFM
<b>BC4.1</b>	<b>Student Numbers</b>	
<b>a</b>	<b>Proposed student target intake</b>	number
<i>note</i> BC4.1a	<b>Full Time (Home/EU)</b>	5
	<b>Full Time (International)</b>	N/A
	<b>Part Time (Heads)</b>	N/A
	<b>Distance Learning (Heads)</b>	N/A
	<b>Minimum viable intake (full-time equivalents)</b>	1



	<b>Maximum viable intake (full-time equivalents)</b>	15			
<b>b</b>	<b>Are the student numbers:</b>				
<i>note BC4.1b</i>	a) <b>available via redistribution within the School?</b> <i>Consult the Head of School</i>	<b>YES</b>	√	<b>NO</b>	
	b) <b>available via redistribution within the Faculty?</b> <i>Consult the Dean of Faculty</i>	<b>YES</b>		<b>NO</b>	√
	c) <b>additional numbers required?</b> <i>Consult the Planning Office (PLN)</i>	<b>YES</b>		<b>NO</b>	√
	<b>Please give a summary of how your answers to a), b) and c) above will be achieved.</b>				
	Year in Industry programme to assist existing recruitment targets.				
<b>BC4.2</b>	<b>Tuition Fees</b>				
	<b>Please select the relevant fee schedule:</b>				
	a) <b>Standard Home/EU/International</b>	£9,000 per annum			
	b) <b>Full-cost</b> <i>Please consult with FFM</i>	0			
	c) <b>Other</b> <i>Please provide brief details</i>	0			

<b>BC5</b>	<b>IMPACT</b>				
<b>BC5.1</b> <i>note BC5.1</i>	<b>EQUALITY AND DIVERSITY</b>			Consult with Equality & Diversity Manager and Widening Participation team	
<b>a</b>	<b>Does the course and/or School cover a subject area(s) which traditionally attract(s) a very specific or narrow student profile?</b>	<b>YES</b>	√	<b>NO</b>	
<b>b</b>	<b>If yes, what steps will be taken to attract non-traditional students to the course/School?</b> (Aspects to consider include: age, disability, ethnicity (home and international), gender, sexual orientation, religion and belief, and socio-economic group.)				
	<p>The BSc and MMath degree programmes offered by MTH have traditionally attracted 18-year-olds with strong A-level grades. Typically applicants have always wanted to study maths exclusively. First-years typically form a mix of about 30-40% women to 60-70% men, (2014 intake: 24-76% women-men).</p> <p>The School is currently preparing for Athena Swan bronze award and has been critically reviewing possible strategy to increase non-traditional uptake of the subject and address the question of male/female ratio applications. Students on the Year in Industry Programme will benefit from any future action plan implemented.</p>				

	<p>In 2013 the number of accepts on G1 Mathematics was 37% female and 63% male, nationally. The 2013 entry for UEA is similar to this national picture (33% female/ 67% male) but 2014 entry has seen predominantly male accepts (24%/76%).</p> <p>The Faculty has contacted Helen Murdoch (Equality &amp; Diversity Manager) for some advice on this issue. Several proposals have been suggested that the School will consider within the Athena Swan review and the development of the course and promotional information including:</p> <ul style="list-style-type: none"> <li>identifying success stories of recent female graduates from the School for use in recruitment marketing</li> <li>to complete short focus groups/mini-surveys to identify any gender or other equality issues for choosing the course</li> </ul> <p>These proposals will form part of the action plan for the recruitment and retention strategy for the course.</p> <p>MTH is actively involved in outreach, but will work with outreach department to identify any further activities that the School can support to generate interest from more urban areas across the UK.</p> <p>The course is considered accessible for mobility impaired students.</p>		
<b>c</b>	<b>Will students undertake placements/ come into direct contact with vulnerable groups as part of their study? If so, will a CRB be required?</b>		
	NO		
<b>BC 5.2</b> <i>note</i> <i>BC5.2</i>	<b>CURRENT STUDENTS AND/OR APPLICANTS</b>		
<b>a</b>	<b>Have School SSLCs been consulted regarding this proposal? If YES, what has been their input/response?</b>	<b>YES</b>	YES
		<b>NO</b>	
	Positive and supportive of the Year in Industry course variant (meeting held 11/02/2015). Minutes are available online via blackboard.		
<b>b</b>	<b>Will any current students or applicants be affected by this proposal?</b>	<b>YES</b>	
		<b>NO</b> (go to 5.3)	√
<b>c</b>	<b>Evidence of consultation of current students and written consent obtained</b> Please briefly describe what consultation has taken place and what responses there have been. Is there full support from all members of the relevant student cohort(s)?		
<b>d</b>	<b>Informing applicants</b> What arrangements have been made for informing applicants who may be affected by any change(s)? Written notification, including advice about any		

	alternative options that may be given, must be sent to applicants holding unconditional/ conditional firm or conditional insurance offers.		
<b>BC5.3</b> <i>note</i> <i>BC5.3</i>	<b>ACADEMIC STAFF</b>	Consult with HOS, Dean of Faculty	
	<b>What is the impact / what are the resource implications of the proposal on academic staff?</b>		
<b>a</b>	<b>Please give an indicative number of <u>additional</u> teaching hours required within the school to deliver the new course/changes to the course in any one year</b>	Academic time will be needed to serve the roles as programme director and module organiser for the industry year, including two site visits during the placement	
<b>b</b>	<b>Is a new discipline or specialism being introduced that requires a new appointment?</b>	<b>YES</b>	
		<b>NO</b>	No
<b>c</b>	<b>Are new appointments required to meet any additional hours?</b>	<b>YES</b>	
		<b>NO</b>	No
<b>d</b>	<b>If yes to either b or c above, how many of what type (eg Teaching and Scholarship, Teaching and Research) and at what level?</b>		
<b>e</b>	<b>What is the source of funding for new academic staff?</b>		
<b>f</b>	<b>Are there any implications outside the sponsoring School/s e.g. service teaching, by other Schools of Studies?</b>		
<b>g</b>	<b>Are any other teaching adjustments required? For example, will new modules be introduced, other modules withdrawn or combined?</b>		
	None		
<b>BC5.4</b> <i>note</i> <i>BC5.4</i>	<b>COURSE RATIONALISATION</b>	Consult with HOS, Dean of relevant Faculties, PLN	
<b>a</b>	<b>DO ANY SIMILAR COURSES ALREADY EXIST AT UEA?</b>	<b>YES</b>	
		<b>NO</b>	No

	<b>If YES, please specify Course name, UCAS Code(s) / Course codes</b>		
<b>b</b>	<b>IS/ARE ANY COURSE(S) TO BE CLOSED TO NEW APPLICANTS AS PART OF THIS PROPOSAL?</b>	<b>YES</b>	
		<b>NO</b>	No
	<b>If YES, please specify Course name, UCAS Code(s) / Course codes and date from which course(s) is to be withdrawn?</b>		
<b>c</b>	<b>Please give an indicative number of teaching hours <u>released</u> within the school in any one year by the closure of the courses listed above</b>		

<b>BC6</b>	<b>PHYSICAL RESOURCES</b>		
<b>BC6.1</b> <i>note BC6.1</i>	<b>What new or additional facilities and /or equipment are required for the delivery of this course?</b>		
<b>a</b>	<b>Classroom and study facilities</b>	N/A	
<b>b</b>	<b>Computer equipment</b>	N/A	
<b>c</b>	<b>Other equipment</b>	N/A	
<b>d</b>	<b>Consumables</b>	N/A	
<b>BC6.2</b>	<b>What additional books/journals/electronic resources, other than those already available, will be required year by year until steady state is reached?</b>		
	NONE		
<b>BC6.3</b>	<b>Are there any other special arrangements on which this course proposal will depend? (E.g. placements, year abroad).</b>	<b>YES</b>	YES
		<b>NO</b>	
	<b>If Yes, please give details of likely costs/whether appropriate agreements are in place/have to be drawn up?</b>		
	Additional support, from Careers and the industry coordinator, will be required to aid the students in sourcing their industrial placement. This support will also be incorporated within the UEA skills award, in line with other science schools' Year in industry programmes.		
<b>BC6.4</b>	<b>Are there any start-up costs (e.g. any initial publicity and promotion?)</b>	<b>YES</b>	YES
		<b>NO</b>	
	<b>If yes, please give details:</b>		
	The costs will be incorporated into existing marketing budgets/strategies for the school of mathematics.		

<b>BC7</b> <i>note BC7</i>	<b>IMPACT / RESOURCE IMPLICATIONS FOR OTHER UNIVERSITY SERVICES</b>		
COMPLETION OF THIS SECTION TO BE COORDINATED BY LEARNING AND TEACHING SERVICE (LTS) COORDINATOR			

Please circulate Parts 1 & 2 to the following for their comments (if any). Comments to be returned within 10 working days.

*note  
BC7*

**What is the impact of the proposal on support staff and resources in the office for which you are responsible?**

**Date of circulation:**

18.03.2015

BC7.1

Dean of Students (DOS)

Although the anticipated intake is small, any increase in student numbers has a potential impact on the already overstretched services delivered by DOS.

BC7.2

Deputy Dean of Students (accommodation)

New full-time students who meet the conditions of their offers and do not reside within 12 miles of the University remain within the University's current accommodation guarantee. Subject to the granting of Planning Permission, we hope to have additional residential capacity in September 2016

BC7.3

Director of Information Services (ISD)

No specific comments to make.

BC7.4

Director of Library Services (LIB)

Although no additional book requirements are listed in section BC6.2 we believe that any additional texts which may be required can be managed from within the constraints of the existing Maths School book budget. Should any new texts/extra copies of texts in stock be required the Course Director should liaise with the SCI Faculty Librarian well in advance of the course start. If any additional journal titles are required it is the current policy for the School to identify a suitable journal of equal value within the library budget for cancellation.

BC7.5

Careers Manager (CCEN)

Careers support to Year in Industry students is currently delivered through a mix of compulsory bespoke lectures (sessions run for all Science YII students) and optional careers provision open to all students (such as online resources, events, workshops, individual appointments and School drop-ins). Maths Year in Industry students will have access to all this support, and we do not anticipate a noticeable impact on the workload of the Careers Service.

BC7.6

Head of Learning & Teaching Service (LTS)

As there are no additional numbers proposed, it doesn't look like there would be any additional resource requirement for the Service. However, we review student numbers each year across the service, and this would be kept under review.

BC7.7

Head of Admissions (ARM)

	No comment.
BC7.8	Director of Planning Office (PLN)
	No response received.
BC7.9	Any other service or department
<i>note</i> BC7.9	

<b>BC8</b>	<b>ADDITIONAL COMMENTS</b>
COMPLETION OF THIS SECTION TO BE COORDINATED BY LEARNING AND TEACHING SERVICE (LTS) COORDINATOR	
Please circulate Parts 1 & 2 to the following for their comments (if any). Comments to be returned within 10 working days.	
<i>note</i> BC8	<b>Is there anything further to add to the proposal from the perspective of your service and expertise?</b>
<b>Date of circulation:</b>	18.03.2015
BC8.1	Market Research Manager (on Section BC2)
	This form contains reference to UCAS data; as this was not requested from the BIU and the source is not given we cannot comment on the validity. The form also outlines competitor institution entry requirements taken from a review conducted by the BIU so we can confirm these to be correct at the time of writing.
BC8.2	Careers Manager (on Section BC3)
	Most maths students have a low level of engagement with UEA's Careers Service, often choosing to focus on their degree whilst at university and consider career options after graduation. Therefore, we strongly welcome this initiative which will encourage students to consider their careers and employability at an earlier stage, and benefit from a greater level of careers support. Feedback from employers also shows a clear preference for hiring graduates with previous work experience, so completing an industry placement is highly likely to benefit both students on the scheme, and the School's graduate employability rate.
BC8.3	Equality & Diversity Manager (on Section BC5.1)
	I welcome the School's comments re. gender equality and know they are working on various strategies to increase female students. I welcome the addition of the year in industry – my only query is whether the School have considered how they will support the placements particularly in respect of disabled students?
BC8.4	Director of Planning Office (PLN) (on full Business Case)
	No response received.
BC8.5	Faculty Finance Manager (on full Business Case)

<i>note</i> <i>BC8.5</i>	No response received.
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<b>BC9</b>	<b>PROPOSER'S RESPONSE TO COMMENTS IN BC7 &amp; BC8 ABOVE</b>
<i>note</i> <i>BC9</i>	Response to BIU in BC8.1: The UCAS data was sourced by BIU for the course approval Maths with Foundation Year and utilised again for this programme as it was within the same school of study.

## FULL COURSE PROPOSAL

### Part 3 ACADEMIC CASE (including Programme Specification)

AC1	COURSE MANAGEMENT INFORMATION				
AC1.1	REGULATORY FRAMEWORK (please tick all that apply)				
	Undergraduate Regulations (including Integrated Masters)			yes	
	Postgraduate Taught Regulations				
	Graduate Diplomas				
	PGCE				
AC1.2a	Is the course as a whole assessed on a pass/fail basis?	YES		NO	no
AC1.2b	Are any modules assessed on a pass/fail basis?	YES	yes	NO	
AC1.2c	If so, how many modules and what is the credit volume for each module?				
	The industry year is a single module of 120 credits. See PS3.1 Learning Progression for detail about how the module will be assessed as pass/fail and how the student's progression will subsequently change.				

AC2 <i>note AC2.1</i>	YEAR WEIGHTINGS AND PROGRESSION REQUIREMENTS (For undergraduate or integrated masters courses only)				
	Please select only from the permitted options - see UG/PGT regulations				
Stage <i>Note AC2.2</i>	Level	Year of course	Weightings	Progression requirement	Exit Award <i>Note AC2.3</i>
Stage 1	Level 4	1	0	Pass 120 credits at level 4.	Certificate of HE
Stage 2	Level 5	2	40%	Pass a minimum of 100 credits at level 5 and no more than 20 credits at level 4. Satisfactory engagement in employability activities.	Diploma of HE
Year Abroad / in Industry		3	0	Pass 120 credit placement module	Diploma of HE



Stage 3	Level 6	4	60%	Pass a minimum of 90 credits at level 6 & no more than 30 credits at level 5, none at level 4.	BSc
Stage M	Level 7				

<b>AC3</b>	<b>BOARD OF EXAMINERS</b>				
AC3.1	Is there an existing Board of Examiners?	YES	Y	NO	
AC3.2a	If YES, which existing board will be responsible for the course?	Mathematics			
AC3.2b	If NO, please enter details for new board of examiners				
	Are any new external examiner(s) required?	YES		NO	No
AC3.3b	If yes, how many?				

<b>PS</b>	<b>PROGRAMME SPECIFICATION</b>
<i>note PS</i>	This part of the form will serve a dual purpose. Please read the guidance note carefully before completing



University of East Anglia

LEARNING & TEACHING SERVICE

# **PROGRAMME SPECIFICATION FOR AN AWARD OF THE UNIVERSITY OF EAST ANGLIA**

Course name	Route code <i>note S2b</i>	Year
Mathematics with a Year in Industry		2016-17

**NOTE: Whilst the University will make every effort to offer the modules listed, changes may sometimes have to be made for reasons outside the University's control (e.g. illness of a member of staff) or because of low enrolment or sabbatical leave. Where this is the case, the University will endeavour to inform students.**

**PS1 COURSE PROFILE - *continued***

*note PS1*

YEAR 1 profile				Level	This column will be deleted prior to publication
				4	
Module Code (TBA if not known)	Compulsory? - or name of Option range	Credits	Module Title	Teaching period, eg Sem 1, Year-long	New / amended / existing
MTHA4001Y	Compulsory	20	Sets, numbers and probability	Year-long	existing
MTHA4002Y	Compulsory	20	Linear algebra	Year-long	existing
MTHA4003Y	Compulsory	20	Real analysis	Year-long	existing
MTHA4004Y	Compulsory	20	Mathematical problem solving, mechanics and modelling	Year-long	existing
MTHA4005Y	Compulsory	40	Calculus and multi-variable calculus	Year-long	existing

**PS1 COURSE PROFILE - *continued***
*note PS1*

YEAR 2 profile				Level	This column will be deleted prior to publication
				5	
Module Code (TBA if not known)	Compulsory? - or name of Option range	Credits	Module Title	Teaching period, eg Sem 1, Year-long	New / amended / existing
MTHA5001Y	Compulsory	20	Analysis	Year-long	existing
MTHA5002Y	Compulsory	20	Fluid dynamics – theory and computation	Year-long	existing
MTHA5003Y	Compulsory	20	Algebra	Year-long	existing
MTHA5004Y	Compulsory	20	Differential equations and applied methods	Year-long	existing
CMP5034A	Options A	20	Mathematical Statistics	Sem1	existing
MTHA5005Y	Options A	20	Mathematics Project	Year-long	existing
MTHF5001A	Options A	20	Elementary Number Theory and Quantum Mechanics	Sem1	existing
MTHF5012Y	Options A	20	Elementary Number Theory and Combinations	Year-long	existing
MTHF5013Y	Options A	20	Elementary Number Theory and Mathematical Modelling	Year-long	existing
MTHF5014Y	Options A	20	Quantum Mechanics and Combinatorics	Year-long	existing
MTHF5015Y	Options A	20	QUANTUM MECHANICS AND MATHEMATICAL MODELLING	Year-long	existing

MTHF5016B	Options A	20	COMBINATORICS AND MATHEMATICAL MODELLING	Sem2	existing
MTHF5017Y	Options A	40	TOPICS IN MATHEMATICS	Year-long	existing
CMP5017B	Options B	20	APPLIED STATISTICS A	Sem2	existing
CMP5033A	Options B	20	SOUND AND IMAGE 1	Sem2	existing
ENV5008A	Options B	20	METEROLOGY 1	Sem2	existing
NBS4001Y	Options B	20	INTRODUCTION TO FINANCIAL AND MANAGEMENT ACCOUNTING	Year-long	existing
NBS4002Y	Options B	20	INTRODUCTION TO BUSINESS	Year-long	existing

<b>YEAR 3 profile</b>				<b>Level</b>	This column will be deleted prior to publication
				5	
<b>Module Code (TBA if not known)</b>	<b>Compulsory? - or name of Option range</b>	<b>Credits</b>	<b>Module Title</b>	<b>Teaching period, eg Sem 1, Year-long</b>	<b>New / amended / existing</b>
MTH****Y	Compulsory	120	Year In Industry Placement	N/A	New

**PS1 COURSE PROFILE - *continued***
*note PS1*

YEAR 4 profile					Level	This column will be deleted prior to publication
					6	
Module Code (TBA if not known)	Compulsory? - or name of Option range	Credits	Module Title		Teaching period, eg Sem 1, Year-long	New / amended / existing
MTHE6002A	Options A,B,C	20	FREE SURFACE FLOWS		SEM1	Existing
MTHE6003B	Options A,B,C	20	SET THEORY	SEM2	Existing	
MTHE6004A	Options A,B,C	20	GALOIS THEORY		SEM1	Existing
MTHE6005A	Options A,B,C	20	GRAPH THEORY		SEM1	Existing
MTHE6006A	Options A,B,C	20	ASYMPTOTIC ANALYSIS		SEM2	Existing
MTHE6007B	Options A,B,C	20	DYNAMICAL OCEANOGRAPHY		SEM2	Existing
MTHE6011B	Options A,B,C	20	SEMIGROUP THEORY		SEM2	Existing
MTHE6012B	Options A,B,C	20	INTRODUCTION TO NUMERICAL ANALYSIS		SEM2	Existing
MTHE6013A	Options A,B,C	20	FINANCIAL MATHEMATICS	SEM1	Existing	
MTHE6001A	Options B and C	20	HISTORY OF MATHEMATICS		SEM1	Existing

MTHT6002A	Options B and C	20	THE LEARNING & TEACHING OF MATHEMATICS	SEM1	Existing
MTHA6005Y	Options C	20	MATHEMATICS PROJECT	Year-long	Existing
MTHF5011A	Options C	20	ELEMENTARY NUMBER THEORY AND QUANTUM MECHANICS	SEM1	Existing
MTHF5012Y	Options C	20	ELEMENTARY NUMBER THEORY AND COMBINATORICS	Year-long	Existing
MTHF5013Y	Options C	20	ELEMENTARY NUMBER THEORY AND MATHEMATICAL MODELLING	Year-long	Existing
MTHF5014Y	Options C	20	QUANTUM MECHANICS AND COMBINATOR	Year-long	Existing
MTHF5015Y	Options C	20	QUANTUM MECHANICS AND MATHEMATICAL MODELLING	Year-long	Existing
MTHF5016B	Options C	20	COMBINATORICS AND MATHEMATICAL MODELLING	SEM2	Existing
MTHF5017Y	Options C	20	TOPICS IN MATHEMATICS	Year-long	Existing
CMP5017B	Options D	20	APPLIED STATISTICS A	SEM2	Existing
CMP5020B	Options D	20	PROGRAMMING FOR NON-SPECIALISTS	SEM2	Existing
CMP5033A	Options D	20	SOUND AND IMAGE 1	SEM1	Existing
CMP6004A	Options D	20	ADVANCED STATISTICS	SEM1	Existing
ENV5008A	Options D	20	METEOROLOGY I	SEM1	Existing
ENV5009B	Options D	20	METEOROLOGY II	SEM2	Existing
ENV5016A	Options D	20	OCEAN CIRCULATION	SEM1	Existing



NAT5001A	Options D	20	ASTROPHYSICS WITH ADVANCED TOPICS	SEM1	Existing
NBS5001B	Options D	20	ACCOUNTING FOR NON-SPECIALISTS	SEM2	Existing

PS2 MAPPING LEARNING OUTCOMES					note PS2				
Mapping learning outcomes – please list learning outcomes and enter module code against assessment type <b>YEAR 1 learning outcomes</b>	Assessment type								
	Essay	Lab report	Course test	Exam	Project/ Dissertation/ Rep	Oral Presentation	Assessment of practice	Other	Other
demonstrate a reasonable understanding of the main body of knowledge.				All modules					All modules
demonstrate a good level of skill in calculation and manipulation of the material within this body of knowledge.				All modules					All modules
apply a range of concepts and principles in loosely-defined contexts, showing effective judgment in the selection and application of tools and techniques.				All modules					All modules
develop and evaluate logical arguments.				All modules					All modules
demonstrate skill in abstracting the essentials of problems, formulating them mathematically and obtaining solutions by appropriate methods.				All modules					All modules
present arguments and conclusions effectively and accurately.				All modules					All modules
demonstrate appropriate general skills.				All modules					All modules
demonstrate the ability to work professionally with a degree of independence, seeking assistance when needed.				All modules					All modules

**Other:** please give details

**PS2 MAPPING LEARNING OUTCOMES - continued**

note PS2

<b>Mapping learning outcomes – please list learning outcomes and enter module code against assessment type YEAR 2 learning outcomes</b>	Assessment type								
	Essay	Lab report	Course test	Exam	Project/ Dissertation/ Rep	Oral Presentation	Assessment of practice	Other: project	Other: CW exercise
demonstrate a reasonable understanding of the main body of knowledge.				All modules				MTHA5005Y	All modules
demonstrate a good level of skill in calculation and manipulation of the material within this body of knowledge.				All modules					All modules
apply a range of concepts and principles in loosely-defined contexts, showing effective judgment in the selection and application of tools and techniques.				All modules					All modules
develop and evaluate logical arguments.				All modules					All modules
demonstrate skill in abstracting the essentials of problems, formulating them mathematically and obtaining solutions by appropriate methods.				All modules				MTHA5005Y	All modules
present arguments and conclusions effectively and accurately.				All modules				MTHA5005Y	All modules
demonstrate appropriate general skills.				All modules				MTHA5005Y	All modules
demonstrate the ability to work professionally with a degree of independence, seeking assistance when needed.				All modules				MTHA5005Y	All modules
<b>Other:</b> please give details									

Mapping learning outcomes – please list learning outcomes and enter module code against assessment type YEAR 3 learning outcomes									Assessment type
	Essay	Lab report	Course test	Exam	Project/ Dissertation/ Rep	Oral Presentation	Assessment of practice	Other: project	Other: CW exercise
Application of mathematics within a work-based environment									
<b>PS2 MAPPING LEARNING OUTCOMES - continued</b>									<i>note PS2</i>

Mapping learning outcomes – please list learning outcomes and enter module code against assessment type YEAR 4 learning outcomes	Assessment type								
	Essay	Lab report	Course test	Exam	Project/ Dissertation/ Rep	Oral Presentation	Assessment of practice	Other Project	Other CW exercises
demonstrate a reasonable understanding of the main body of know-ledge.	MTHA6001A			All mo- dules				MTHA6005Y	All mo- dules
demonstrate a good level of skill in calculation and manipulation of the material within this body of knowledge.				All mo- dules					All mo- dules
apply a range of concepts and principles in loosely-defined contexts, showing effective judgment in the selection and application of tools and techniques.	MTHA6001A			All mo- dules					All mo- dules

develop and evaluate logical arguments.				All modules					All modules
demonstrate skill in abstracting the essentials of problems, formula-ting them mathematically and obtaining solutions by appropriate methods.				All modules				MTHA6005Y	All modules
present arguments and conclusions effectively and accurately.	MTHA6001A			All modules				MTHA6005Y	All modules
demonstrate appropriate general skills.	MTHA6001A			All modules				MTHA6005Y	All modules
demonstrate the ability to work professionally with a degree of independence, seeking assistance when needed.	MTHA6001A			All modules				MTHA6005Y	All modules

## PS3 PROGRAMME COHERENCE AND FEEDBACK CYCLES

*note  
PS3*

### PS3.1 learning progression

How will progression in terms of skills, knowledge and understanding be reflected in the programme between modules in any one year and across the years as students progress through their course of study?

*note  
PS3.1*

Learning progression follows the same format as G100, except in progression from year 2 to the year 3 industry placement, where Students who have not fully engaged in the UEA skills award, as a means of preparation for year 3, will be transferred to G100. Similarly, students who are unsuccessful in obtaining industry placements will also be transferred to G100. The standard progression mark of 40% in year 2 is also required to progress to year 3. To progress from year 3 industry placement onto year 4, students will be expected have satisfactory attendance records and progress reports. As per the code of practice, regular contact will be maintained with the industry coordinator and a report will be submitted by the student at least every two months. Students will be further monitored for satisfactory attendance and progress by the industrial supervisor who will assign daily activities; in the event that the student fails to attend to the satisfaction of the industrial supervisor and/or industry coordinator the placement will end. The student will be intercalated for the remainder of the academic year and return in September onto the final year of the G100. Students subject to tier 4 will also be receive two on-site visits from an academic member of staff for UKVI compliance.

### PS3.2 feedback cycle

Please explain how assessments and feedback / feed forward support the coherence of the programme. Comment on number and types of assessment, both formative and summative; the types and format of feedback students will receive; and their sequencing. How will assessments and feedback impact on subsequent modules?

*note  
PS3.2*

Feedback cycle follows the same format as G100. For the industry year, industry coordinators will provide guidance on satisfactory completion of progress reports.

<b>PS4</b>	<b>EXAMINATIONS</b>		<i>note PS4</i>
	<b>Written</b>	<b>Practical (e.g. OSCES and OSPES)</b>	
How many modules will include an exam element?			
How many hours of exams are there in Stage 0? (if applicable)			
How many hours of exams are there in Stage 1?	3+2+2+2+2=11.		
How many hours of exams are there in Stage 2?	At least 4X3=12; up to 16.		
How many hours of exams are there in Stage 3?	NA		
How many hours of exams are there in Stage 4? (if applicable)	At least 4X3=12; up to 6X3=18.		
How many hours of exams are there in Stage 5? (if applicable)	NA		
How many hours does the programme (as a whole) include?	At least 39 hours; up to 53 hours.		

<b>PS5</b>	<b>EQUALITY &amp; WIDENING PARTICIPATION</b>		<i>note PS5</i>
PS5.1	How do the admissions criteria specifically for this course ensure equality of opportunity for all applicants?		
	Admissions procedures, including any applicant interviewing, will follow the regulations and guidelines set by UEA.		
PS5.2	What steps have been taken to ensure an inclusive curriculum?		

	Modules in the first year require A-level Mathematics (an entry condition) but not Further Mathematics. Thereafter modules build on one another, year on year, and the ability to pick modules and track an individual route through the programme becomes a focus in the latter years. Individual student needs are attended to with care and diligence (for example through the provision of printed lecture notes prior to lectures).
PS5.3	In what ways do learning and teaching and assessment methods ensure inclusivity, reasonable adjustment and equality of opportunity? The School adopts a range of teaching methods from lectures to seminars to work to the strengths of students and ensure that all students are fully supported in their academic study. Coursework deadlines are publicised well in advance permitting all students time to prepare their work properly. Where extenuating factors arise, applications for extensions are dealt with fairly and sympathetically. For examinations, extra time is allowed where needed. Marking is done anonymously. Scripts from students with a learning difficulty are clearly marked and clear guidance is given to markers to ensure a fair assessment of such scripts.

<b>PS6</b>	<b>EMPLOYABILITY</b>	<i>note PS6</i>
	How is employability embedded into the delivery of the course? The key rationale behind an industry placement is that students gain vital skills that enhance their employability and prepares them for the workplace once they graduate.	

<b>AC4</b>	<b>MODULE OUTLINES FOR EXISTING COMPULSORY MODULES</b>			
<i>note AC4</i>	Number of existing COMPULSORY modules	Nine		
	Module outlines attached? (as Appendix 1 to this form)	YES	Y	NO

<b>AC5</b>	<b>MINOR CHANGES TO EXISTING MODULES</b>	
<i>note AC5</i>	Please list all existing modules, compulsory and optional, to which you are proposing minor changes	
<b>Module Code</b>	<b>Module Title</b>	<b>Minor changes proposed</b>



<b>AC6</b>	<b>NEW MODULES</b>	
<i>note</i> AC6	How many new modules are being proposed?	One.
Please complete a table AC6.x for each proposed new module		

<b>AC6.1</b>	<b>NEW MODULE</b>			
Module Title	Year in Industry			
Level	5			
Credit Value	120			
Teaching period, eg Semester 1, Year-long	Year-long			
Likely Module Organiser	Dr Paul Hammerton			
Module Type (eg EX/CW/WW/PR etc)	CHECK COURSE CATALOGUE			
Does the Module include an Exam? Yes/No	No	How long will the exam be? (ie 1, 2 3 hours)		
Module Marking Scheme (Please tick as appropriate)	Pass/Fail?	Yes	Percentage marking?	No
Proposed Module Code	MTH*TBC*			
Module Delivery (eg distance-learning campus based, work placement)	Work placement			
Brief Description	<p>Maths students on placement will receive 2 site visits (or more if circumstances dictate). They will be expected to submit to MTH Industrial Coordinator a 500 word (approx) report on their working experience every 2 months. There will be a final report (a combination of progress reports previously discussed and some self-reflection on the placement. Students not engaging in this activity will be transferred to BSc Maths.</p> <p>Support in finding work placements will be provided by the MTH School and SCI Faculty, the MTH Industrial Coordinator and UEA Careers &amp; Employability, which offers CV and application writing, interview preparation and practice.</p> <p>The MTH School will provide Alumni Careers evening (attendance compulsory), with those on programme invited to dinner with alumni.</p>			

Aims / learning outcomes	
Key Reading (2-5 key texts or resources for targeted Library expenditure/purchase)	

\*\*\*\*Please copy and paste the above table for additional new modules\*\*\*\*

<b>AC 7</b> <i>note</i> AC7	<b>DEFINED CHOICE</b>		
How do you envisage 'Defined Choice' working for the course in question? Please specify, for each year of the course, defined choice within the 3 categories of: <ul style="list-style-type: none"> <li>• Programme-specific choice</li> <li>• Enrichment and Employment modules (EEC)</li> <li>• Language choice</li> </ul>			
Same as the defined choices for years 1, 2 and 3 of BSc Mathematics Programme.			

<b>AC8</b> <i>note</i> AC8	<b>JOINT COURSES</b>		
	<b>Is the proposed course a joint course?</b>	<b>YES</b>	
		<b>NO</b>	No
	<b>If YES, how will the student experience be managed?</b>		

<b>AC9</b>	<b>COMMENTS/FEEDBACK FROM EXTERNAL PROFESSIONALS/ BODIES</b>
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<i>note</i> AC9	<b>Please provide a summary of external professional feedback received. Append full reports as Appendix 2</b>
	N/A
<i>note</i> AC9	<b>Please provide a summary of Professional, Statutory or Regulatory Body (PSRB) approval, if appropriate. Append any relevant documents as Appendix 3</b>
	N/A

<b>AC10</b>	<b>COMMENTS ON ACADEMIC CASE AND PROGRAMME SPECIFICATION</b>	
COMPLETION OF THIS SECTION TO BE COORDINATED BY LEARNING AND TEACHING SERVICE (LTS) COORDINATOR		
<i>note</i> AC10	<b>Please circulate Parts 1, 3 &amp; 4 to the following for their additional comments (if any). Comments to be returned to proposer within 10 working days.</b>  <b>NB these comments should focus on the <i>ACADEMIC CONTENT</i> of the proposal</b>	
<b>Date of circulation:</b>	18.03.2015	
AC10.1	Careers Manager (CCEN)	
No comment		
AC10.2	Learning & Teaching Service (LTS) Manager (UG or PGT, as appropriate)	
<p>In the academic case, I think there has been a misunderstanding in section A1.2a and c. The whole of the year in industry is 'pass/fail', but all other modules are given a mark, therefore AC1.2a should be 'no', and AC1.2 should just cover the 120 credit module for the year in industry. It is interesting that MTH has taken this approach, whilst CMP has a 80-credit module 'year in industry' which is pass/fail and a 40 credit project, which is given a mark,</p>		

and has to be passed to progress to the final year. The Faculty may want to give some thought as to the merits of the two different models.

Regarding the year in industry, there is no detail given on how the attendance will be monitored, or what the School would do if the student failed to attend regularly. Having systems in place to monitor attendance and follow up on non-attendance is part of the Code of Practice on placement learning, which any year out should adhere to.

The year in industry is not included in the Course Profile part of the programme specification, and therefore there are no learning outcomes associated with it, which doesn't reflect all the learning outcome possibilities of the year out and should be addressed.

AC10.3	Equality & Diversity Manager (PPE)
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No comment.

<b>AC11</b>	<b>PROPOSER'S RESPONSE TO COMMENTS IN AC9 &amp; AC10 ABOVE</b>
<i>note</i> AC11	<p>The comments in AC10.2 have been amended in sections AC1, PS1, and PS3.1 has been updated to address the issues raised.</p> <p>PS3.1: Learning progression follows the same format as G100, except in progression from year 2 to the year 3 industry placement, where Students who have not fully engaged in the UEA skills award, as a means of preparation for year 3, will be transferred to G100. Similarly, students who are unsuccessful in obtaining industry placements will also be transferred to G100. The standard progression mark of 40% in year 2 is also required to progress to year 3. To progress from year 3 industry placement onto year 4, students will be expected have satisfactory attendance records and progress reports. As per the code of practice, regular contact will be maintained with the industry coordinator and a report will be submitted by the student at least every two months. Students will be further monitored for satisfactory attendance and progress by the industrial supervisor who will assign daily activities; in the event that the student fails to attend to the satisfaction of the industrial supervisor and/or industry coordinator the placement will end. The student will be intercalated for the remainder of the academic year and return in September onto the final year of the G100. All students, including those subject to tier 4, will receive two on-site visits from an academic member of staff for UKVI and UEA compliance.</p>

## FULL COURSE PROPOSAL

### Part 4 KEY INFORMATION SET (KIS) DATA

<b>KIS</b>	<b>KEY INFORMATION SET data (undergraduate courses only)</b>						<i>Note KIS</i>
<b>KIS1</b>	<b>Quantitative KIS data</b>						<i>Note KIS1</i>
		Year 1	Year 2	Year 3	Year 4	Year 5	
1.1	Percentage of assessment by written exams	35-47	55	80	80	-	
1.2	Percentage of assessment by practical exams	0--20	0	0	0	-	
1.3	Percentage of assessment by coursework	30--50	45	20	20	-	
1.4	Percentage of time in scheduled learning and teaching activities	About 27	26	27	21	-	
1.5	Percentage of time in guided independent study	About 73	74	73	79	-	
1.6	Percentage of time on placements	0	0	0	0	-	
<b>KIS2</b>	<b>Professional Accreditation</b>						<i>Note KIS2</i>
2.1	Name of accrediting body (if applicable)						
	N/A						
2.2	Please give details, including any memberships, exemptions etc that the award confers. Please also give accrediting body website URL.						
	N/A						
2.3	Is the accreditation dependent on specific module choices? If so, please include URL of web pages where these details are outlined.						
	N/A						


# FULL COURSE PROPOSAL

## Part 5 APPROVALS AND NOTIFICATION

### APPROVALS

*Note AP*

THIS SECTION WILL BE COORDINATED BY THE SECRETARY TO YOUR FACULTY TEACHING AND LEARNING QUALITY COMMITTEE (FLTQC)				
AP1	APPROVAL OF THE BUSINESS CASE			
	APPROVAL/SIGNATURES	Name	Signature/ evidence of approval	Date
AP1.1	School Director of Learning, Teaching and Quality		<p><b>From:</b> eparau@gmail.com [mailto:eparau@gmail.com]  <b>On Behalf Of</b> Emilian Parau  <b>Sent:</b> Monday, April 20, 2015 10:05 AM  <b>To:</b> David Evans (MTH)  <b>Cc:</b> Carole Bull (LTS); Ben Milner (CMP); Paula Joannou (SCI); Paul Hammerton (MTH)  <b>Subject:</b> Re: MTH New Course Approval</p> <p>Dear Carole,                      I'm also happy to approve this, subject to David's observations.</p> <p>Best regards,                      Emilian</p>	20/04/15
AP1.2	Head of School (on behalf of School Board)		<p><b>From:</b> David Evans (MTH)  <b>Sent:</b> Friday, April 17, 2015 2:03 PM  <b>To:</b> Carole Bull (LTS)  <b>Cc:</b> David Evans (MTH); Emilian Parau (MTH); Ben Milner (CMP); Paula Joannou (SCI); Paul Hammerton (MTH)  <b>Subject:</b> Re: MTH New Course Approval  <b>Importance:</b> High</p> <p>Dear Carole,                      In principle, I approve this, but I have a couple of comments.</p> <p>5.3a: The response 'NONE' should be deleted. The response should indicate that academic staff time will be needed to serve the roles of Programme Director and Placement co-ordinator/</p>	20/04/15  Note: Comments have now been addressed 22/04/15

			<p>module organiser for the year in Industry and to engage in any necessary site visits.</p> <p>In AC11 the response to PS3.1 suggests that site visits will only be required for tier 4 students. Is this correct? If not, it should be re-worded. If it is correct the reference to site visits elsewhere (in particular 5.3a) should reflect this.</p> <p>Best wishes</p> <p>David</p>	
AP1.3	Dean of Faculty (on behalf of Faculty Executive)			22/4/15
AP1.4	LTC (if relevant)			
AP1.5	Council (if relevant)			
AP1.6	Reasons for approval being withheld (and by whom)			

AP2	APPROVAL OF THE ACADEMIC CASE			
AP2.1	Head of School	Name	Signature	Date
	Approved:		<p><b>From:</b> David Evans (MTH)  <b>Sent:</b> Friday, April 17, 2015 2:03 PM  <b>To:</b> Carole Bull (LTS)  <b>Cc:</b> David Evans (MTH); Emilian Parau (MTH); Ben Milner (CMP); Paula Joannou (SCI); Paul Hammerton (MTH)  <b>Subject:</b> Re: MTH New Course Approval  <b>Importance:</b> High</p> <p>Dear Carole,  In principle, I approve this, but I have a couple of comments. (See above for details)</p>	20/04/15

	Approved with amendments:			Note: Comments have now been addressed 22/04/15
	Rejected:			
	Comments (if any):			
AP2.2	<b>Faculty Associate Dean (for Faculty LTQC)</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>
	<b>Approved:</b>		From: Ben Milner (CMP) Sent: Thursday, April 30, 2015 10:40 AM To: Emilian Parau (MTH) Cc: Peter Courridge (PLN); Paul Hammerton (MTH); Carole Bull (LTS) Subject: MTH with a Yinl  Emilian,  Following on from yesterday's LTQC, these are my comments on the course proposal. They are minor. Once these are done it is approved by SCI LTQC.  Ben.	
	<b>Approved with amendments:</b>		Amendments received.	01/05/15
	<b>Rejected:</b>			
	Comments (if any):			
AP2.3	<b>PVC Academic (for LTC)</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>
	<b>Approved:</b>			
	<b>Approved with amendments:</b>			



	<b>Rejected:</b>			
	Comments (if any):			
<b>Where applicable:</b>				
AP2.4	<b>Secretary to Council</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>
	<b>Approved:</b>			
	<b>Approved with amendments:</b>			
	<b>Rejected:</b>			
	Comments (if any):			

## FULL COURSE PROPOSAL

<i>Note N1</i>				<b>NOTIFICATION OF APPROVAL</b>	
This section should be completed by Faculty FLTQC Secretary once a course proposal has been approved. Its purpose is to ensure that relevant Offices are informed of the approval of course proposals (new courses and course amendments), in accordance with the procedures for course approval.					
<b>FACULTY</b>				<b>SCHOOL</b>	
<b>NEW COURSE?</b>		<b>Y</b>	<b>N</b>	<b>If NO, please enter existing course code</b>	
<b>DEGREE AWARD (e.g. BSc/MA)</b>					
<b>TITLE OF PROGRAMME</b>					
<b>START DATE</b>				<b>LENGTH OF COURSE</b>	
Course Approved by:			Name of Committee Chair		Date of approval
<b>Faculty Learning and Teaching Quality Committee (FLTQC)</b>					
<b>Learning and Teaching Committee (LTC)</b>					
<b>RELEVANT OFFICE INFORMED? *insert date</b>					
<b>Planning Office</b>		<b>Admissions and Marketing</b>		<b>Learning and Teaching Service</b>	
<b>Union of UEA Students</b>					
*		*		*	
sis.records@uea.ac.uk		arm.operations@uea.ac.uk		Email the LTS coordinator responsible for the course	
				union.academic@uea.ac.uk	

<i>Note N1</i>		<b>IMPLEMENTATION ACTIONS</b>	
<b>COURSE NAME</b>		<b>NEW ROUTE CODE</b>	
<b>ACTION</b>			<b>DATE</b>

<b>COURSE INFORMATION LIVE IN ADMISSIONS</b>	
<b>PROGRAMME SPECIFICATION UPLOADED ONTO WEBSITE</b>	
<b>COURSE PROFILE UPLOADED ONTO SITS</b>	
<b>COURSE CLOSURES COMMENCED (where appropriate)</b>	

## Appendix 1

### Compulsory Existing Module Outlines

#### Year 1:

##### MTHA4001Y, SETS, NUMBERS AND PROBABILITY

<b>Academic Session</b>	2014/5
<b>Period</b>	YEAR
<b>Occ.</b>	A
<b>Slot</b>	AA (Autumn), CC (Spring)
<b>Credit Value</b>	20
<b>School</b>	Mathematics
<b>Actual (Target)</b>	58 (120)
<b>Module Organiser</b>	Dr Robert Gray
<b>Assessment</b>	Examination with Coursework or Project

##### Module Description

Basic set-theoretic notation, functions. Proof by induction, arithmetic, rationals and irrationals, the Euclidean algorithm. Styles of proof. Elementary set theory. Modular arithmetic, equivalence relations. Countability. Probability as a measurement of uncertainty, statistical experiments and Bayes' theorem. Discrete and continuous distributions. Expectation. Applications of probability: Markov chains, reliability theory.

##### MTHA4002Y, LINEAR ALGEBRA

<b>Academic Session</b>	2014/5
<b>Period</b>	YEAR

<b>Occ.</b>	A
<b>Slot</b>	AA
<b>Credit Value</b>	20
<b>School</b>	Mathematics
<b>Actual (Target)</b>	59 (120)
<b>Module Organiser</b>	Professor David Evans
<b>Assessment</b>	Examination with Coursework or Project

#### Module Description

Linear equations and matrices (including geometric aspects); Determinants. Eigenvalues and eigenvectors, Diagonalization. Vector spaces and linear transformations.

#### MTHA4003Y, REAL ANALYSIS

<b>Academic Session</b>	2014/5
<b>Period</b>	YEAR
<b>Occ.</b>	A
<b>Slot</b>	BB
<b>Credit Value</b>	20
<b>School</b>	Mathematics
<b>Actual (Target)</b>	58 (120)
<b>Module Organiser</b>	Dr Jonathan Kirby
<b>Assessment</b>	Examination with Coursework or Project

#### Module Description

Sequences and series, tests for convergence. Limits, continuity, differentiation, Riemann integration, Fundamental Theorem.

#### MTHA4004Y, MATHEMATICAL PROBLEM SOLVING, MECHANICS AND MODELLING

<b>Academic Session</b>	2014/5
<b>Period</b>	YEAR
<b>Occ.</b>	A
<b>Slot</b>	CC
<b>Credit Value</b>	20
<b>School</b>	Mathematics
<b>Actual (Target)</b>	52 (120)
<b>Module Organiser</b>	Dr Robert Whittaker
<b>Assessment</b>	Examination with Coursework or Project

#### Module Description

STUDENTS FROM YEARS 2 OUTSIDE SCHOOL OF MATHEMATICS CAN TAKE THIS MODULE IF THEY HAVE TAKEN BEFORE MTHA4005Y OR MTHB4006Y OR ENV-4002Y AND THEY HAVE NOT TAKEN MTHB4007B. The first part of the module is about how to approach mathematical problems (both pure and applied) and write mathematics. It aims to promote accurate writing, reading and thinking about mathematics, and to improve students' confidence and abilities to tackle unfamiliar problems. The second part of the module is about Mechanics. It includes discussion of Newton's laws of motion, particle dynamics, orbits, and conservation laws. This module is reserved for students registered in the School of Mathematics or registered on a Natural Sciences degree programme.

#### MTHA4005Y, CALCULUS AND MULTIVARIABLE CALCULUS

<b>Academic Session</b>	2014/5
<b>Period</b>	YEAR
<b>Occ.</b>	A
<b>Slot</b>	DD
<b>Credit Value</b>	40
<b>School</b>	Mathematics
<b>Actual (Target)</b>	66 (100)
<b>Module Organiser</b>	Dr Hayder Salman
<b>Assessment</b>	Examination with Coursework or Project

### Module Description

This module is incompatible with MTHB4006Y and ENV-4002Y. (a) Complex numbers. (b) Differentiation and integration. Taylor and MacLaurin series. Applications: curve sketching, areas, arc length. (c) First order, second order constant coefficient ordinary differential equations. Reduction of order. Numerical solutions using MAPLE. Partial derivatives, chain rule. (d) Vectors. (e) Line integrals. Multiple integrals, including change of co-ordinates by Jacobians. Green's theorem in the plane. (f) Euler type and general linear ODEs. Phase plane, direction fields, limit cycles, period doubling and chaos. (g) Divergence, gradient and curl of a vector field. Scalar potential and path independence of line integral. Divergence and Stokes' theorems.

### Year 2:

#### MTHA5001Y, ANALYSIS

<b>Academic Session</b>	2014/5
<b>Period</b>	YEAR
<b>Occ.</b>	A
<b>Slot</b>	AA
<b>Credit Value</b>	20
<b>School</b>	Mathematics
<b>Actual (Target)</b>	110 (126)
<b>Module Organiser</b>	Dr David Aspero
<b>Assessment</b>	Examination with Coursework or Project

### Module Description

(a) Continuity, differentiation, uniform convergence, power series and how they represent functions for both real and complex variables. (b) Topology of the complex plane, holomorphic functions, Cauchy-Riemann equations, complex integration, Cauchy and Laurent theorems, residue calculus

#### MTHA5002Y, FLUID DYNAMICS - THEORY AND COMPUTATION

<b>Academic Session</b>	2014/5
<b>Period</b>	YEAR
<b>Occ.</b>	A

<b>Slot</b>	BB
<b>Credit Value</b>	20
<b>School</b>	Mathematics
<b>Actual (Target)</b>	112 (126)
<b>Module Organiser</b>	Dr Hayder Salman
<b>Assessment</b>	Examination with Coursework or Project

### Module Description

(a) Hydrostatics, compressibility. Kinematics: velocity, particle path, streamlines. Continuity, incompressibility, streamtubes. Dynamics: Material derivative, Euler's equations, vorticity and irrotational flows. Velocity potential and streamfunction. Bernoulli's equation for unsteady flow. Circulation: Kelvin's Theorem, Helmholtz's theorems. Basic water waves. (b) Computational methods for fluid dynamics; Euler's method and Runge-Kutta methods and their use for computing particle paths and streamlines in a variety of two-dimensional and three-dimensional flows; numerical computation and flow visualisation using Matlab; convergence, consistency and stability of numerical integration methods for ODEs. (c) Theory of Irrotational and Incompressible Flows: velocity potential, Laplace's Equation, sources and vortices, complex potential. Force on a body and the Blasius theorem. Method of images and conformal mappings.

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### MTHA5003Y, ALGEBRA

<b>Academic Session</b>	2014/5
<b>Period</b>	YEAR
<b>Occ.</b>	A
<b>Slot</b>	BB
<b>Credit Value</b>	20
<b>School</b>	Mathematics
<b>Actual (Target)</b>	109 (126)
<b>Module Organiser</b>	Dr Johannes Siemons
<b>Assessment</b>	Examination with Coursework or Project

### Module Description

(a) Group theory: basic concepts and examples. Cosets, Lagrange's theorem. Normal subgroups and quotient groups. First isomorphism theorem. Quotient spaces in linear algebra. (b) Rings, elementary properties and examples of commutative rings. Ideals, quotient rings. Polynomial rings and construction of finite fields. Unique Factorization in rings. Applications in linear algebra.

#### MTHA5004Y, DIFFERENTIAL EQUATIONS AND APPLIED METHODS

<b>Academic Session</b>	2014/5
<b>Period</b>	YEAR
<b>Occ.</b>	A
<b>Slot</b>	AA
<b>Credit Value</b>	20
<b>School</b>	Mathematics
<b>Actual (Target)</b>	113 (126)
<b>Module Organiser</b>	Dr Richard Purvis
<b>Assessment</b>	Examination with Coursework or Project

#### Module Description

(a) Ordinary Differential Equations: solution by reduction of order; variation of parameters for inhomogeneous problems; series solution and the method of Frobenius. Legendre's and Bessel's equations: Legendre polynomials, Bessel functions and their recurrence relations; Fourier series; Partial differential equations (PDEs): heat equation, wave equation, Laplace's equation; solution by separation of variables. (b) Method of characteristics for hyperbolic equations; the characteristic equations; Fourier transform and its use in solving linear PDEs; (c) Dynamical Systems: equilibrium points and their stability; the phase plane; theory and applications.

**\*\*end of document\*\***