School of Informatics Course Proposal Form (version: May 2021)

Please see Page 2 for instructions on which parts of this form to complete, whom to consult with to avoid unnecessary effort, and where to send the completed form.

Proposer(s): Stuart Anderson   Date: 11 Oct 2021

Cover page: Basic permanent course information

Unless otherwise noted, items in this section are entered into EUCLID and **cannot** be changed without creating an entirely new course.

Course Name	Standards Compliant Software Development
Is this an EPCC course?	_X_ No (default) *(If you don't know what EPCC is, this is the right choice.)* __ Yes *(If so, leave Course Acronym blank, to be filled in by ITO as EPCC/<number> for Theon and our Sortable List.)*
Course Acronym *(used only School-internally)*	SCSD
SCQF Credit Level and Normal Year Taken	**Standard options for Informatics courses:** __ Level 8/Year 1 __ Level 8/Year 2 __ Level 10/Year 3 (also available in Year 4). *[In practice, most level 10 courses have many students in both UG3 and UG4. MSc students may take up to 20 credits at Level 10.]* _X_ Level 11/Year 4 (also available in Year 5 and MSc). *[These courses are listed as options in both UG and MSc DPTs.]* __ Level 11/PG (also available in Year 5). *[These courses are normally for MSc and UG5 students. They are not explicitly listed in UG4 DPTs, but UG4 students can take limited credits of them.]* __ Level 11/PG (only). *[These courses are not available to UG4 or UG5 students. Examples: CDT courses; CPD courses.]* **Other options. Please provide justification if using:** __ Level 9/Year 3 *[Deprecated except for compulsory UG3 courses. The course will not be available to other years.]* __ Level 10/Year 4 __ Other:
SCQF Credit Points	_X_ 10 __ 20 __ 40 __ 60 __ 80 __ Other:
Delivery Location	_X_ Campus __ On-line Distance Learning
Course Type	_X_ Standard (default) __ Dissertation __ Online Distance Learning __ Placement __ Student Led Individually Created Course __ Year Abroad
Marking Scheme	_X_ Standard (numerical) __ Letter grade only __ Pass/Fail *[Normally only for externally delivered courses]*

Guidance for remaining sections:

Before starting your proposal: please contact the DDoLT (Curriculum) informally before starting to complete this form, with at least the following information:
- Tentative course title, level, year, and number of credits
- Who the target audience is, and why the course is needed.

The DDoLT (Curriculum) or delegate will schedule a meeting with you to discuss your plans and whether a full course proposal makes sense. If so, you will be provided with further instructions.

Deadlines: New courses must be approved by the December BoS meeting to ensure allocation of teaching staff for the following academic year. Since it may require considerable discussion and iteration to prepare the proposal, you should **contact the DDoLT (Curriculum) as early as possible, ideally in spring or summer**, and you should **plan on submitting your full proposal by November.**

Submitting your proposal: When your proposal is complete, please submit to **iss-bos@inf.ed.ac.uk**.

Colour coding and item-by-item guidance:
Guidance is provided in italics for each item. Please also refer to the guidance for new course proposals at http://www.inf.ed.ac.uk/student-services/committees/board-of-studies/course-proposal-guidelines. Examples of previous course proposal submissions are available on the past meetings page http://web.inf.ed.ac.uk/infweb/admin/committees/bos/meetings-directory but note that the proposal form was updated in Apr 2021.

Sections in gold are for student view and are required before a course can be entered into DRPS.
Sections in orange are for School use but are still required for all courses (even those that have already been approved based on other documentation).
Section in gray are for consideration by the Board of Studies. They are normally required for all new course proposals but may be omitted in some cases, with permission (e.g., for invited proposals).

Glossary of terms:

(D)DoLT: (Deputy) Director of Learning and Teaching.

DRPS ([The Degree Regulations and Programmes of Study](#)): Provides the University's official listing and descriptions of courses, degree programmes, and the regulations that govern them; updated annually in April. Course information in DRPS is considered a contract with students.

DPT (Degree Programme Table): Lays out the course requirements for each year of a degree. All UoE degrees have a DPT in the DRPS.

Path: A system that students use to help choose courses and view options in their DPT. The information feeds through from DRPS but has a more student-friendly interface (e.g., by highlighting courses that are not running or where the student hasn't satisfied prerequisites).

SCQF ([The Scottish Credit Qualifications Framework](#)): Lays out the requirements for courses at different levels and with different numbers of credits.

1. Course overview and case for support

Except as noted, all fields are required and will go into the DRPS (course catalogue) entry for students.
Important: Text in DRPS is effectively a contract with students, so should not include details that are likely to change from year to year.

Summary Description (for DRPS)

As our societies and economies become increasingly dependant on software-based systems there is a corresponding increase in the development of standards and regulation that aim to ensure such systems are fit for purpose. This course provides an overview of standards and regulation, what is necessary to ensure compliance and processes to maintain compliance from initial requirements to the eventual decommissioning of the system. We will consider modern architectures and agile, continuous processes considering their strengths and weaknesses.

Contribution to curriculum; target audience and expected demand; consultation (for BoS only)

Why is this course needed and how does it relate to existing courses and degree programmes (including any prerequisite courses)?	This is a replacement for the SAPM course and will cover some aspects that were previously covered in SAPM (so Software Architecture and Process Management will feature but mainly in relation to standards and regulation). In addition, I think we need a course like this, software is increasingly governed by standards and regulation, and we don't say much about this in our programmes. The new AI regulations are a good example, and processes have changed to continuous integration/delivery that pose challenges for regulators.
What is the target audience, in terms of background and interests, and what is the expected demand (class size) for the course? *State what your estimate is based on: e.g. by referring to projects in an area, sizes of similar courses, employer demand, etc. A survey of students may be requested once the main descriptor information is ready.*	Students need to be reasonably mature having some experience of programming and professional practice covered in courses like SEPP and PI with some experience of some application domains that are covered by standards and regulation e.g. security or IoT or Machine Learning or Robotics. Estimate 50-100 students – this is the sort of range SAPM had when it ran
Has this proposal been discussed with the DDoLT (Curriculum) or DoLT prior to BoS submission?	_X_ Yes ___ No
Who else has been consulted? *Proposals should typically be discussed with relevant colleagues, including the programme director (for MSc courses). Summarize their comments if needed.*	At the suggestion of DoLT, I discussed this with Antonio Barbalace who is looking at the structure of the CS degree and the potential for a systems MSc. I have also discussed it with the SEPP and PI lecturers.

Course Description (for DRPS)

The course provides an overview of standards and regulations affecting software-based systems, concentrating on the way standards and regulations exert control over compliant systems. We will then consider how standards and regulation influence requirements and the requirements gathering process. Then consider tools and techniques that can be deployed to provide evidence of compliance. Finally we consider the full process from the initiation of development to the eventual decommissioning of the system
We consider:

- Standards and regulation: Here we consider a range of standards and regulation such as the MISRA C/C++ coding standard, the emerging EU AI regulations, Medical Device Standards such as EN 62304, Avionics (DO-178C), Process Control (IEC 61508) and others, including Security standards.
- Requirements gathering: Here we consider practices like hazard and risk analysis, performance requirements, conformance to rules, and how the compliance requirement influences and is incorporated into the more general requirements process.
- Evidence supporting compliance: Here we look at tools and techniques that support the generation of evidence that the system complies with these include standard architectures, testing, static analysers, verifiers, and others.
- Processes for compliant systems: increasingly systems continuously evolve as they are modified in use (not all standards admit the possibility of evolution). Here we consider the range of approaches to process from the rigid v-model to modern system development practice and how different processes organise the production of compliance evidence.

Class members will work in small groups taking a case study as their focus. Groups will be guided to provide a documented analysis of the strengths, weaknesses, potential for improvement and sustainability of the system and associated compliance-demonstrating processes. This work will be available to other class members as part of the learning materials of the course. Each class member will also develop a portfolio demonstrating they have individually achieved the learning outcomes of the course. This will be based on work included in the analysis of the case study augmented by appropriate other evidence. Acceptable kinds of evidence demonstrating achievement of the learning outcomes are diverse so part of the assessment is the design of the portfolio in advance of its construction. There are two or three "standard" portfolio designs but class members are encouraged to develop their own approaches that take account of their personal strengths and weaknesses. Portfolio designs will include assessment criteria. Each week there will be a group meeting, around 1-2 hours of recorded material covering the lecture material in the course and a guest lecture given by a practitioner on their experience of working with standards compliant systems.

Assessment Weightings (for DRPS)

Written Exam _____0%
Practical Exam ____0% (*for courses with programming exams*)
Coursework ___100%

Additional Information, Assessment (for DRPS)

This is a 10 credit course so it aims to provide an overview of the issues and techniques illustrated through the use of case studies and critical analysis of the case studies. Course members will work in small tutorial groups developing their analysis of different facets of their case study and publishing their work to the rest of the class. Individually, c lass members will develop a portfolio of evidence of attainment of the learning outcomes of the course. At an early stage in the course the design of each individual portfolio will be agreed in order to provide appropriate structure for the portfolio. Two or three "standard" portfolio designs are available and specimen portfolios are also available. Class members are encouraged to develop their own portfolio designs or modify standard designs to meet their learning needs.

Learning Outcomes (MAXIMUM OF 5; for DRPS)

On completion of this course, the student will be able to

1) Describe the structure of typical standards and regulation for a range of domains of application.

2) Explain and motivate the goals set by regulation and standards and how they influence the requirements for compliant systems.

3) Given an example system and standard or regulation, justify what evidence would be needed to comply with the regulation or standard

4) Given an example system development process and standard or regulation, evaluate how effective the process can be in generating evidence of compliance to the standard or regulation.

Graduate Attributes, Personal & Professional Skills (for DRPS)

Research and enquiry: problem-solving, critical/analytical thinking, handling ambiguity, knowledge integration – these are all developed in building the analysis of the case study in a small group. This will involve identifying strengths and weaknesses in the case study, augmenting and integrating additional material and considering the impact of regulation on the system.

Personal effectiveness: planning and organizing, flexibility and change management – the portfolio design requires planning ahead to see what can be done and adapting to changed circumstances as the work on the case study develops.

Personal responsibility and autonomy: independent learning, self-awareness and reflection, creativity, decision-making – all of these will be required in developing the case study and individual portfolio of evidence of the achievement of the learning outcomes of the course.

Communication: interpersonal/teamwork skills; verbal, written, cross-cultural - all of these will be developed in the small group work where students are encouraged to work as a team to develop the analysis of their case study.

2. Additional information on course design and resourcing (for BoS only, except where noted)

Breakdown of Learning and Teaching Activities (for DRPS)

Please fill in the number of timetabled hours per student for each type of activity. Do not include non-timetabled hours.

A typical 10pt Informatics course *has:*
- *18-20 lecture slots (2/wk), but only ~15h should be examinable lectures, with the rest used for guest lectures, revision sessions, assignment feedforward/ feedback, etc. If unsure of plans, count these under 'lecture hours' but please explain tentative plans in the free text below.*
- *No more than 4-5 lab or tutorial hours. Please consider whether fewer can be used, e.g. by using some lecture hours for whole-class discussion/feedforward.*

A typical 20pt course *has 30 lecture slots (3/wk) and no more than 8 lab/tutorial hours.*

Timetabled Hours	Type
18	Lecture Hours
10	Seminar/Tutorial Hours
0	Dissertation Project Supervision Hours
	Supervised Lab/Workshop/Studio Hours
2	Feedback/Feedforward hours
0	Summative assessment hours *[Normally 2h if using an exam; otherwise 0]*
0	Revision Session Hours

(Note for ISS: Remaining hours should be allocated to Directed and Undirected Learning Activities.)

Use of timetabled activities (not to be included in DRPS)
- Each week will cover topic and the material on the topic will be available as a series of short videos.
- Each week there will be a guest lecture that is relevant to the current topic and is presented by an expert in the field or in a particular domain.
- Class members will work in groups of at most 10 developing an analysis of a chosen case study. This will comprise a chosen domain and system. The analysis will identify appropriate standards and regulations, means of establishing compliance together with an assessment of the quality of evidence generated by those means and an evaluation of the strengths and weaknesses of different processes to manage compliance. There will be weekly meetings of the groups with a tutor in attendance on alternate weeks.
- Class members will construct a portfolio of evidence that they meet the learning outcomes of the course, in the first three weeks students will submit a design of their portfolio and will receive feedback on the acceptability of the proposed evidence. This may need revision to be acceptable.

Summative assessment and time spent on assignments (not to be included in DRPS)
- Class members will develop a case study that covers all aspects of the development of regulated software. This will not be assessed but will be the primary source of evidence that they have achieved the learning outcomes of the course. This will be augmented with additional evidence. All the case studies will be developed as living documents on a wiki visible by all.
- The assessment will be based on the individual portfolio. This will be structured according to the learning outcomes of the course and class members will provide evidence of attainment

under each LO. Evidence will mostly be derived from contributions to the case study the student is working on but could include other elements. For example, contributions or critiques of the work of other groups, performance in tests provided in the course, oral presentations. The final deadline for the portfolio will be week 1 of semester 2 or revision week prior to the main exam diet depending on whether the course is presented in semester 1 or semester 2.

- The design of the portfolio should be complete by the end of week 3, this will cover the contents of the portfolio and when each of the activities contributing to the portfolio will be completed. The design will be the subject of review and formative feedback this will provide a programme of work for the remainder of the course that is open to review.
- A portfolio will be assessed on the quality of the evidence of attainment of the LO and that the evidence is the work of the portfolio owner.
- Example portfolios will be made available to students and there will be two "standard" portfolio plans that could be adopted by students if they choose.

Tentative plans for feedback/formative assessment (not to be included in DRPS)

The portfolio design will be formatively assessed and will plan out the planned learning and how it will be evidenced. Each meeting of the groups will consider progress against the portfolio design and will consider the quality of work and progress against the plan.

Decolonisation and Inclusivity (not to be included in DRPS)

Content: Standards and regulation are dominated by first world players and non-compliance is a significant inhibitor to trade. One of the early videos will consider the geopolitical context for software regulation and standards using papers such as these to illustrate some of the issues around digitalisation (the literature directly on regulation and standards is pretty thin but digitalization is driving regulation to some extent and there are clear differences between different blocs):

F. Habibi and M. A. Zabardast, "Digitalization, education and economic growth: A comparative analysis of Middle East and OECD countries," *Technology in Society*, vol. 63, p. 101370, Nov. 2020, doi: 10.1016/j.techsoc.2020.101370.

G. Myovella, M. Karacuka, and J. Haucap, "Digitalization and economic growth: A comparative analysis of Sub-Saharan Africa and OECD economies," *Telecommunications Policy*, vol. 44, no. 2, p. 101856, Mar. 2020, doi: 10.1016/j.telpol.2019.101856.

Class members with an interest in standards and regulation in a particular region or domain will be encouraged to include consideration of this in their portfolio plan. Some elements of cross-economy and cross-geography comparisons will be raised in each of the sections.

Delivery: The aim is to make the assessment as "democratic" as possible where students have choice on the form of evidence of attainment. This should allow students to focus on their strengths and applying them to provide strong evidence of attaining the LOs for the course. This will also provide a means to adapt the assessment for students with disabilities. For example, students who cannot work in a group can develop a portfolio plan comprising only their individual work.

Anticipated Resource Requirements

If tutorials are needed, how many students per tutors? (*Please provide your desired number, and the maximum feasible number.*)	20 students per tutorial, i.e. two small groups. The tutorials will be structured to leverage the

	presence of two groups to promote learning and discussion.
If labs are needed, how many students per demonstrator? (*Please provide your desired number, and the maximum feasible number.*)	**0**
Please estimate the number of hours required for marking, per student.	**1.5**
If any other teaching support resource will be requested in order to **develop** or **maintain** the course, please provide an estimate of that here.	I think in the medium term it would be good to have a database of regulations and standards – but that may exist already
Do you anticipate any difficulty recruiting enough teaching support? (*For example if the course is very large or very specialized.*)	**No**
Does the course have any scaling limits due to available space or equipment?	**No**
If equipment is required, please state how it will be procured and maintained.	**None required**
Does the course have any external funding? (*Typically only for CPD courses*)	**No**
Does the course need any special arrangements such as quotas, agreements with other schools, or registration arrangements? Does it have any atypical characteristics that may affect finance or student registration? Please specify if so.	In year 1 I would like to quota the course at 60 students to allow for some experimentation in the presentation of the course.

3. Further information for BoS consideration

A full proposal for a new course must include examples of exercises and assessment. Please provide these below, along with publicity information.

Course information and publicity
The course is aimed at students on SoI courses, no additional publicity is necessary.

Sample tutorial/lab sheet questions
Each tutorial meeting of the group will have a group of questions/provocations that class members should consider before the meetings. These will help structure the case study document. The case study document will generally be split into four sections: an overview of the standard in the case study; a discussion of the requirements mandated by the standard for the case study under consideration; what evidence is required to justify that a system meets the requirement with a discussion of type of evidence and how to judge the quality of evidence; a discussion of options for the process to deliver the system.

A first meeting tutorial sheet (this is an example)
In advance of your group meeting:
- *You should have read an overview of the standard or regulation you are considering, have looked in more detail in some sections of the standard or regulation that interest you, have read the description of the domain of application and purpose of the system you are considering in the case study.*
- *You should also consider your personal answers to the questions below in preparation for the group discussion on how these might help you decide what the overview of your standard should look like in the case study documentation.*
- *Decide with the group how you want to document your group meetings. You might want to make an audio recording and have it transcribed, or a video using some tool like stream or collaborate or have a minute taker whose primary task is to record group decisions and actions to be completed by specified individuals.*

Questions (Think about justifying your answers by identifying short quotations from the standard or otherwise)
1. *What are the main sections of the standard or regulation and what is their purpose?*
2. *What is the scope of the standard (what kinds of systems and what domain(s)) is the standard addressing?*
3. *What is the context for the standard or regulation? Are there other related standards or regulations or broader requirements on systems of th type you are considering?*
4. *Is the system in your case study within the scope of the standard?*
5. *Is the standard or regulation goal setting, or does it regulate in some other way?*
6. *What does the standard or regulation attempt to regulate?*
7. *Who are the main stakeholders in demonstrating compliance?*
8. *What are the incentives that encourage compliance?*
9. *Who could be held responsible for non-compliance?*
10. *What are the potential consequences of non-compliance?*
11. *Is the standard or regulation risk-based?*
12. *How does the standard or regulation demonstrate compliance to the standard or regulation?*
13. *Does the standard or regulation have a classification that requires different action to demonstrate compliance depending on how the system is classified?*

Sample assessment materials

The course is assessed entirely by a single coursework submitted at the end of the course. The tutorials are devoted to developing the final submission and providing formative feedback on the development of the final coursework.

Each group of 10 students is working on developing a case study demonstrating the application of a particular standard or regulation to systems that address a particular problem. This will be structured into 4 components: an overall description of the the standard or regulation; the sorts of additional requirements placed on the system by the standard; the types of evidence needed to demonstrate the requirements are satisfied and how this is used to demonstrate compliance with the standard or regulation; whole lifecycle processes that support compliant development and deployment of standards-compliant systems.

The case study is NOT evaluated directly. However, students are expected to refer to the case study they are working on in their portfolio. The portfolio is directed to demonstrating the student has achieved the learning outcomes specified in the course description:

1) Describe the structure of typical standards and regulation for a range of domains of application.
    a. In this section the class member would be expected to point to place in their case study where they demonstrate awareness of the structure of standards and regulations and the relationship of their standard or regulation to other standards and regulations.
    b. Comments on others work in the wiki that indicate an informed perspective and make good, actionable, suggestions for improvement can also provide evidence of achieving the LO.
    c. Learning on the course will be supported by quizzes related to the LOs and the student could also refer to performance on those.
    d. Evidence of authorship can refer to the authorship evidence on the wiki, distinctiveness of the contribution, acknowledgement form other class members.
2) Explain and motivate the goals set by regulation and standards and how they influence the requirements for compliant systems.
    a. Similar to LO 1) with the expectation that there would be some specific examples drawn from the case study of requirements that are necessary to demonstrate compliance. Evidence of authorship of materails referred to here would also be required.
3) Given an example system and standard or regulation, justify what evidence would be needed to comply with the regulation or standard
    a. Similar to LO 2) with examples drawn from the cases studies of techniques and tools that can be used to generate evidence that a particular requirement has been satisfied. Evidence of authorship of materails referred to here would also be required.
4) Given an example system development process and standard or regulation, evaluate how effective the process can be in generating evidence of compliance to the standard or regulation.
    a. Similar to LO 3) but relating to process descriptions, demonstrating alternatives with some assessment of the strengths and weakness of different processes.

Any other relevant materials

Include anything else that is relevant, possibly in the form of links. If you do not want to specify a set of concrete readings for the official course descriptor, please list examples here.

4. Additional Course Details for DRPS

Except where otherwise noted, these fields are required for entry into EUCLID and will be visible to students in the DRPS entry.

Planned Academic Year of Delivery *(The first year you anticipate the course running, e.g. AY 2019-20)*	AY 22-23
Keywords *Give a list of searchable keywords for the course.*	Software engineering, development process, software architecture, standards, regulation, compliance
Course Organiser *(By default, the course proposer)*	Stuart Anderson
Intended Delivery Period	___Semester1 __X_ Semester 2 (or semester 1 – I don't mind) ___Full Year ___Summer ___Other (please specify):
Timetable considerations/conflicts *For School use. Please specify any constraints to be considered (e.g. overlap of popular combinations, other specialism courses, external courses etc). Include whether the semester delivery is constrained or could be flexible.*	
Reading List/Learning Resources (for DRPS) *You are encouraged to create resource lists using* LEGANTO	I will create a leganto list. Here is the type of reading I plan to make use of: [1] A. Coronato, *Engineering High Quality Medical Software: Regulations, standards, methodologies and tools for certification: Regulations, standards, methodologies and tools for certification*. Stevenage: The Institution of Engineering and Technology, 2018. [2] A. Stavert-Dobson, *Health Information Systems: Managing Clinical Risk*. Cham: Springer International Publishing AG, 2016. [3] B. S. Dhillon, *Reliability, Quality, and Safety for Engineers*. Baton Rouge: CRC Press, 2005. doi: 10.1201/9780203006139. [4] D. A. Vogel, *Medical Device Software Verification, Validation, and Compliance*. Norwood: Artech House, 2010. [5]

M. Rausand, *Reliability of safety-critical systems: theory and application / Marvin Rausand ; cover image, Marvin Rausand.* Hoboken, New Jersey: Wiley, 2014.

[6]

T. Myklebust, *The Agile Safety Case by Thor Myklebust, Tor Stålhane.*, 1st ed. 2018. Cham: Springer International Publishing, 2018. doi: 10.1007/978-3-319-70265-0.

[7]

M. Ebers and M. Cantero Gamito, *Algorithmic governance and governance of algorithms: legal and ethical challenges / Martin Ebers; Marta Cantero Gamito.*, 1st ed. 2021. Cham, Switzerland: Springer, 2021. doi: 10.1007/978-3-030-50559-2.

[8]

T. Wischmeyer and T. Rademacher, *Regulating Artificial Intelligence edited by Thomas Wischmeyer, Timo Rademacher.*, 1st ed. 2020. Cham: Springer International Publishing, 2020. doi: 10.1007/978-3-030-32361-5.

[9]

M. Staron, *Automotive Software Architectures: An Introduction*. Cham: Springer International Publishing AG, 2021.

[10]

"ISO/IEC/IEEE Draft International Standard - Systems and software engineering–Systems and software assurance – Part 4: Assurance in the life cycle," *ISO/IEC/IEEE P15026-4/DIS, February 2020*, pp. 1–51, Mar. 2020.

[11]

L. Rierson, *Developing Safety-Critical Software: A Practical Guide for Aviation Software and DO-178C Compliance*, 1st ed. Bosa Roca: CRC Press, 2013. doi: 10.1201/9781315218168.

[12]

G. K. Hanssen, *SafeScrum® – Agile Development of Safety-Critical Software by Geir Kjetil Hanssen, Tor Stålhane, Thor Myklebust.*, 1st ed. 2018. Cham: Springer International Publishing, 2018. doi: 10.1007/978-3-319-99334-8.

[13]

M. Debbabi, *Verification and Validation in Systems Engineering Assessing UML/SysML Design Models / by Mourad Debbabi, Fawzi Hassaïne, Yosr Jarraya, Andrei Soeanu, Luay Alawneh.*, 1st ed. 2010. Berlin, Heidelberg: Springer Berlin Heidelberg, 2010. doi: 10.1007/978-3-642-15228-3.

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Feedback Information *Provide a high-level description of how and what type of feedback will be provided to students, for inclusion in DRPS.*	Students will receive weekly formative feed back on their case study in the tutorials. They will also be required to develop a plan for their portfolio by the end of week three and will receive feedback on that. The summative feedback will evaluate the strentght of the evidence provided by the student that they have attained the LOs of the couse combined with an evaluation that they were responsible for the evidence.
Is this course available to visiting students?	___X_ Yes (default) ___ No **If no, please provide a justification here:**
Required pre-requisite courses *Use sparingly: these are enforced in PATH and can only be waived by approval from the School's Curriculum Approval Officer. Note that cross-year required pre-requisites may prevent MSc students from registering; consider using recommended pre-requisites or "other requirements" instead.*	___X_ No ___ Yes (please specify full course name(s) and code(s)):
Recommended pre-requisite courses	___X_ No ___ Yes (please specify full course name(s) and code(s)):
Required co-requisite courses *Specify any courses that must be taken in parallel with the existing course. Note that this leads to a timetabling constraint that should be mentioned elsewhere in the proposal.*	___X_ No ___ Yes (please specify full course name(s) and code(s)):
Prohibited Combinations *Specify any courses that may not be taken in combination with the proposed course].*	___X_ No ___ Yes (please specify full course name(s) and code(s)):
Other Requirements/Additional Information *This information is often used by MSc students and students from other Schools to see if they have appropriate background without having done our School's courses. So please avoid course titles, instead list specific knowledge and skills (such as mathematical concepts, programming ability or specific languages, etc).*	___X_ No ___ Yes (please specify): Students should have some basic understanding of software engineering and software lifecycle together with experience of programming (e.g. the material covered in the second year SEPP course in Informatics) . Some knowledge of testing and verification is also helpful but not essential.

Also list any other constraints on registration, for example: "Only available to 4th Year Informatics students including those on joint degrees." or "This course is open to all Informatics students including those on joint degrees, and to students in the School of Mathematics. Other external students whose DPT does not list this course should seek permission from the course organiser."	15
Visiting Student Pre-requisites	__X_ Same as "other requirements" ___Different than "other requirements" (please specify):

5. Placement in degree programme tables: for level 9-11 courses only (except EPCC)

This section is for consideration by the Board of Studies and will be used later by ITO to determine where the course will be added to existing degree programme tables.

Is this course restricted to students on a specific degree? *E.g., some courses are only available to students on a specific CDT or MSc.*	__X_ No ___ Yes (please specify and provide justification):
Is this course compulsory for students on any degree(s)?	__X_ No ___ Yes (please specify and provide justification):
Any issues for part-time students? *Normally, part-time students have access to the same courses as full-time students on the equivalent degree. If you anticipate any problems with this, please specify here.*	Noe

For optional courses:

If this course is available but non-compulsory for students on various degrees (most courses), please fill in this section. The choices here determine where the course appears in degree programme tables (DPTs) and the 2-3 character tags are displayed in the Informatics sortable course list.

Should this course be tagged as 'ML' (machine learning foundations and methods)? *Courses with the ML tag are typically very high-demand and most degrees limit the number of ML credits. If your course might appeal to a similar audience but draw off students from these large courses, please select 'no' and choose one of the tags below.*	__X_ No ___ Yes
If you chose 'no', please choose at least one of the following tags... *Ideally, select exactly one, unless there is a good argument for more than one. These three are used in various combinations for many of our degrees.*	__X_ **FSS** (CS foundations, systems, and software) ___ **AIA** (artificial intelligence applications and paradigms) ___ **COG** (cognitive science: including HCI and NLP courses, but not most other AI courses. Please restrict to courses most relevant to natural cognition.)
...and also tick if any of the following tags or categories apply. *Do not tick any of these if you selected 'ML' already.*	__X_ **SE** (software engineering: including courses that are highly relevant to SE degrees. All SE courses should also be FSS. This tag is mainly relevant for UG SE degrees.) ___ Databases and data management systems (used for Data Science MSc and MSc(R)) ___ Unstructured data and applications (used for Data Science MSc and MSc(R)) __X_ Level 11 Security courses (used for Security MSc)

	<u>X</u> ATFC Optional courses (used for ATFC MSc)
If you are not sure which tags are most appropriate or have other questions about this section, please note any comments/issues here.	