





## Full Course Proposal Form

### 1. Case for Support

<b>Overall contribution to teaching portfolio</b> <small>This is for the consideration of the Board of Studies and School of Informatics.</small>	This is a core course of the MSc in Security, Privacy, and Trust.
<b>Target audience and expected demand</b> <small>This is for the consideration of the Board of Studies and School of Informatics.</small>	<p>The course will target MSc students on the MSc in Security, Privacy, and Trust DP. Due to the format of the course, there is a natural cap on the number of students that can be enrolled in the course. Each one-hour session will host two students presentations, so the maximum capacity for this course is 30-35 students.</p> <p>We would expect incoming students to have previously achieved a first-class or strong upper second-class undergraduate degree with honours (or equivalent international qualifications), as a minimum, in a related subject, such as computer science, informatics, engineering, mathematics, or physics (as for the MSc in Security, Privacy and Trust).</p>
<b>Relation to existing curriculum</b> <small>This is for the consideration of the Board of Studies and School of Informatics.</small>	The course is a required course for the MSc in Security, Privacy, and Trust. It compliments our already existing selection of security courses by adding a research topics course.
<b>Anticipated Resource Requirements</b> <small>(Please describe how much lecturing, tutoring, exam preparation and marking effort will be required in steady state, and any additional resources that will be required to set the course up for the first time. Please make sure that you provide estimates relative to class size if there are natural limits to its scalability (e.g. due to equipment or space requirements).</small> <small>This is for the consideration of the Board of Studies and School of Informatics.</small>	<ul style="list-style-type: none"><li>• Lectures: 30</li><li>• Tutoring: 36 (9 weeks of tutorial x estimated 4 tutorial groups)</li><li>• Demonstrating: 0</li><li>• Course Marking: 35 (primarily marking lit reviews)</li><li>• Exam Preparation: 10</li><li>• Exam Marking: 5 hours</li><li>• Other Requirements: 0</li></ul>
<b>Planned Initial Academic Year of Delivery</b> <small>(First year you anticipate the course running).</small> <b>THIS IS MANDATORY</b> <small>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS).</small>	2019

## 2. Course Descriptor

<p><b>Owning School*</b> <i>(Default is Informatics)</i></p> <p><b>THIS IS MANDATORY</b></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS).</p>	<p>School of Informatics</p>
<p><b>Course Name*</b></p> <p><b>THIS IS MANDATORY</b> <i>(This cannot be changed once created on EUCLID, without creating a whole new course).</i></p> <p> This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and cannot be changed without creating a whole new course, once it has been entered on EUCLID.</p>	<p>Research Methods in Security, Privacy, and Trust</p>
<p><b>Course Acronym*</b> <i>(for Sortable List)</i></p> <p><b>THIS IS MANDATORY</b></p> <p>This will appear on the Course Sortable List and Theon as well as influence Teaching Support Role Titles.</p>	<p>SPT</p>
<p><b>Summary Description*</b></p> <p><b>THIS IS MANDATORY</b> <i>[Provide a brief official description of the course, around 100 words. This should be worded in a student-friendly way, it is the part of the descriptor a student is most likely to read.]</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus.</p>	<p>To be a professional or researcher in the area, it is necessary to understand fundamental issues in connection with Cybersecurity, Privacy, and Trust.</p> <p>This course aims to develop a deep understanding of current computer security and privacy research and will prepare students for conducting research in this area.</p> <p>The course will focus on the main aspects of Cybersecurity, Privacy, and Trust, including topics like Cryptography, Software vulnerabilities, Web security, Access control, Mobile security, Differential privacy, Hardware protection, Side channel attacks, Block-chain, Network security, Usable security, and Passwords.</p>
<p><b>Course Description*</b></p> <p><b>THIS IS MANDATORY</b> <i>[Provide an academic description, an outline of the content covered by the course and a description of the learning experience students can expect to get].</i> <a href="#">[Guidance can be found here]</a>.</p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus.</p>	<p>The goal of this course is to introduce students to fundamental security, privacy, and trust concepts and offer them working knowledge of threats and counter-measures in order for them to undertake research in these areas.</p> <p>The topics to be covered in the course will include a sampling of the following:</p> <p>Introduction: fundamental concepts: confidentiality, integrity, and availability, Threat modelling and Human Factors.</p> <p>Security: OS security, secure (through cryptographic primitives) networking protocols, Malware, Network intrusion and DoS mitigation, integrity and authentication schemes</p> <p>Privacy: Privacy enhancing technologies: Anonymous communication systems, Censorship resistance systems, Database privacy, Regulation compliant data processing and storage</p>

	Trust: Centralised and decentralised systems, Distributed trust, block chains and ledgers
<p><b>Course Level*</b>  <b>THIS IS MANDATORY</b>          [This cannot be changed once entered on EUCLID, without creating a whole new course].</p> <p> This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus and cannot be changed without creating a whole new course, once it has been entered on EUCLID.</p>	11
<p><b>Keywords*</b>  <b>THIS IS MANDATORY</b>  <i>(separated by commas)</i>  <i>[A list of searchable keywords.]</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and web searches.</p>	Security, Privacy, Trust, secure systems, Privacy enhancing technologies
<p><b>Programme Collections*</b>  <b>THIS IS MANDATORY</b>  <b>Subject Area and Specialism Classification</b>          (Please select all that apply)</p> <p>This is for the consideration of the Board of Studies and School of Informatics School Curriculum Approval Officer (SCAO) and will dictate how the course fits in with the Degree Programme Table (DPT).</p>	Security, Privacy, and Trust MSc only. Do not add to current program collections.
<p><b>This proposed course is appropriate/important for the following Degree Programmes</b>          (Please select all that apply in the dropdown)</p> <p>This is for the consideration of the Board of Studies and School of Informatics School Curriculum Approval Officer (SCAO) and will dictate how the course fits in with the Degree Programme Table (DPT).</p>	Security, Privacy, and Trust MSc only. Do not add to other program programs.

### 3. Teaching, Learning & Assessment

<p><b>Total Contact Teaching Hours (aka - Breakdown of Learning and Teaching Activities)</b></p> <p><b>THIS IS MANDATORY</b></p> <p><i>[Total number of lecture hours and tutorial hours, with hours for coursework assignments.]</i></p> <p><i>[The breakdown of learning and teaching activities should only include contact hours with the students; everything else should be accounted for in the Directed Learning and Independent Learning hours.</i></p> <p><i>The total being 10 x course credits. Assume 10 weeks of lectures slots and 10 weeks of tutorials, though not all of these need to be filled with actual contact hours. As a guideline, if a 10-pt course has 20 lecture slots in principle, around 15 of these should be filled with examinable material; the rest should be used for guest lectures, revision sessions, introductions to assignments, etc.]</i></p> <p><i>You may also find the guidance on '<a href="#">Total Contact Teaching Hours</a>' and '<a href="#">Examination &amp; Assessment Information</a>'</i></p> <p><i>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus.</i></p>	<ul style="list-style-type: none"> <li>• Lecture: 30</li> <li>• Seminar/Tutorial: 10</li> <li>• Dissertation Project Supervision: 0</li> <li>• Supervise practical/Workshop/Studio: 0</li> <li>• Online Hours: 0</li> <li>• Feedback/Feedforward: 0</li> <li>• Formative Assessment:</li> <li>• Summative assessment: 0</li> <li>• Revision Session: 0</li> <li>• Other Study: 0</li> <li>• Programme Level Sch L&amp;T: 0</li> <li>• Directed &amp; Independent Learning: 0</li> <li>• Placement/Study Abroad: 0</li> <li>• Total: 40.00</li> </ul>
<p><b>Graduate Attributes, Personal &amp; Professional Skills</b></p> <p><b>THIS IS MANDATORY</b></p> <p><i>[This field should be used to describe the contribution made to the development of a student's personal and professional attributes and skills as a result of studying this course – i.e. the generic and transferable skills beyond the subject of study itself. Reference in particular should be made to SCQF learning characteristics at the correct level <a href="http://www.sqa.org.uk/files_ccc/SCQF-LevelDescriptors.pdf">http://www.sqa.org.uk/files_ccc/SCQF-LevelDescriptors.pdf</a>].</i></p> <p><i>You may also wish to consult The University of Edinburgh's Graduate Attributes Framework <a href="https://www.ed.ac.uk/employability/graduate-attributes/framework">https://www.ed.ac.uk/employability/graduate-attributes/framework</a></i></p> <p><i>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus.</i></p>	<ol style="list-style-type: none"> <li>1. Develop skills reading research papers and critically analysing the methodology, technical contributions, and evaluation.</li> <li>2. Be able to transfer knowledge from an academic paper to a real world scenario.</li> <li>3. Apply critical analysis, evaluation and synthesis to issues that are informed by forefront developments in the subject/discipline/sector.</li> </ol>
<p><b>Reading List/Learning Resources</b></p> <p><b>THIS IS MANDATORY</b></p> <p><i>Focus here on the main text books and include link to LEGANTO - <a href="https://www.ed.ac.uk/information-services/research-teaching-staff/resource-lists/using-resource-lists/academic-creates-list">https://www.ed.ac.uk/information-services/research-teaching-staff/resource-lists/using-resource-lists/academic-creates-list</a>.</i></p> <p><i>If you have no required text books, explain that readings will be provided on the main course page.</i></p> <p><i>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus.</i></p>	<p>The text book will be Introduction to Computer Security (First Edition), Michael Goodrich and Roberto Tamassia, Pearson.</p> <p>There will be lecture slides and also a selected papers reading list for optional reading as well as seed material for the literature surveys the students will write.</p>

<p><b>Summary of Intended Learning Outcomes (MAXIMUM OF 5 in total)</b></p> <p><b>THIS IS MANDATORY</b></p> <p>List the learning outcomes of the course, emphasising what the impact of the course will be on an individual who successfully completes it, rather than the activity that will lead to this outcome.</p> <p>There should be a clear relationship and alignment of learning outcomes and the design of assessment to enable students to demonstrate and evidence what learning has been achieved in order to successfully complete and pass the course.</p> <p>You may wish to consult the following guides –</p> <ul style="list-style-type: none"> <li>• <a href="#">Blooms Taxonomy for Learning Outcomes</a>,</li> <li>• <a href="#">Learning Outcome Alignment of Assessment</a></li> <li>• <a href="#">Summary of Course Workload and Assessment - 04.11.2015</a> ]</li> </ul> <p>The guides above are also available on the Board of Studies Course Proposal Guidelines web page.</p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus.</p>	<p><b>On completion of this course, the student will be able to:</b></p> <ul style="list-style-type: none"> <li>* Demonstrate detailed understanding of some of the fundamental aspects of cyber security, privacy and trust.</li> <li>* Develop ability to critically evaluate the literature related to their chosen topic, and to formulate academically-informed views on a range of security issues.</li> <li>* Demonstrate ability to approach an open-ended topic, to research new ideas and experiment with new techniques.</li> <li>* Write a thorough literature survey of a self-selected area of security, privacy, or trust (seeded by one or more of reading list papers).</li> </ul>
<p><b>Assessment Weightings:</b></p> <p><b>THIS IS MANDATORY</b></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus.</p>	<p>Written Exam 34%</p> <p>Practical Exam 0%</p> <p>Coursework 66%</p>
<p><b>Components of Assessment (internal)</b></p> <p><i>[Provide a description of all types of assessment that will be used in the course (e.g. written exam, oral presentation, essay, programming practical, etc) and how each of them will assess the intended learning outcomes listed above. Where coursework involves group work, it is important to remember that every student has to be assessed individually for their contribution to any jointly produced piece of work. Please include any minimum requirements for assessment components e.g. student must pass all individual pieces of assessment as well as course overall].</i></p> <p>This is for the consideration of the Board of Studies and School of Informatics School Curriculum Approval Officer (SCAO).</p> <p>You may wish to consult the following guides –</p> <ul style="list-style-type: none"> <li>• <a href="#">Blooms Taxonomy for Learning Outcomes</a>,</li> <li>• <a href="#">Learning Outcome Alignment of Assessment</a></li> <li>• <a href="#">Summary of Course Workload and Assessment - 04.11.2015</a> ]</li> </ul> <p>The guides above are also available on the Board of Studies Course Proposal Guidelines web page.</p>	<p>Written Examination Students will complete a written examination at the end of the course which covers the breadth of topics.</p> <p>Oral Presentation x2 Student will be expected to present two papers to the class over the course of the semester. They will be marked on a combination of technical accuracy, presentation skills, and ability to lead a discussion.</p> <p>Literature Review Similar to IRR the students will conduct a literature review including reading papers and creating a final document. The review will be marked as part of the coursework.</p> <p><b>If Other, please provide description:</b></p>
<p><b>Components of Assessment (public)</b></p> <p><i>Provide a description of all types of assessment that will be used in the course (e.g. written exam, oral presentation, essay, programming practical, etc) and how each of them will assess the intended learning outcomes listed above.</i></p> <p>You may wish to consult the following guides –</p> <ul style="list-style-type: none"> <li>• <a href="#">Blooms Taxonomy for Learning Outcomes</a>,</li> <li>• <a href="#">Learning Outcome Alignment of Assessment</a></li> <li>• <a href="#">Summary of Course Workload and Assessment - 04.11.2015</a> ]</li> </ul>	<p>Written Examination Students will complete a written examination at the end of the course which covers the breadth of topics.</p> <p>Oral Presentation Students will select and present papers to the other students in the course during select lecture time slots. They will be marked on a combination of technical accuracy, presentation skills, and ability to handle questions during a discussion.</p> <p>Literature Review</p>

<p>The guides above are also available on the Board of Studies Course Proposal Guidelines web page.</p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus to inform the students of what to expect.</p>	<p>Students will conduct a literature review including reading papers and creating a final document. The review will be marked as part of the coursework.</p>
<p><b>Feedback</b> <b>THIS IS MANDATORY</b></p> <p><i>Provide high level information on the feedback students will be given; dates not required.</i></p> <p><i>Provide details on feedback arrangements for the course. This includes when and how course feedback is solicited from the class and responded to, what feedback will be provided on assessment (coursework and exams) within what timeframe, and what opportunities students will be given to respond to feedback. The University is committed to a <a href="#">baseline of principles (enhanced feedback)</a> regarding feedback that we have to implement at every level.</i></p> <p><i>Things to consider for Formative feedback –</i></p> <ul style="list-style-type: none"> <li>• Feedback detailing how the student could improve their performance.</li> <li>• Lecturer can gauge level of understanding in class.</li> <li>• May or may not affect final grade.</li> <li>• Is returned in time for other forms of assessment to which it relates. This allows feedforward.</li> <li>• Obligatory UoE requirement in new course proposals</li> </ul> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus to inform the students of what to expect.</p>	<p>Students will be provided peer-review on their literature surveys throughout the course during tutorials, as well as from the TA running the tutorial.</p> <p>They will also be given feedback about their understanding and their critical arguments when they present their selected paper in the lecture time from the lecturer running the course.</p> <p>These above feedback will not have marks assigned.</p>
<p><b>Sample coursework specification</b></p> <p><i>[Provide a description of a possible assignment with an estimate of effort against each sub-task and a description of marking criteria.]</i></p> <p>This is for the consideration of the Board of Studies and School of Informatics.</p>	<p>Students will be given a list of papers from which they must select. They then must create a presentation approximately 15 minutes long which explains the main content of the paper to the other students. They must then lead a short discussion about the paper which will include coming up with some questions to ask the class if there are none. Marks will be assigned based on presentation quality, accuracy with regards to the content of the presented paper, ability to identify and convey the important aspects, and ability to lead the discussion.</p>
<p><b>Time spend on assignments:</b></p> <p><i>[Weightings up to a 70/30 split between exam and coursework are considered standard, any higher coursework percentage requires a specific justification. The general expectation is that a 10-point course will have an 80/20 split and include the equivalent of one 20-hour coursework assignment (although this can be split into several smaller pieces of coursework. The Practical Examination category should be used for courses with programming exams. You should not expect that during term time a student will have more than 2-4 hours to spend on a single assignment for a course per week. Please note that it is possible, and in many cases desirable, to include formative assignments which are not formally assessed but submitted for feedback, often in combination with peer assessment.)]</i></p> <p>You may wish to consult the <a href="#">Summary of Course Workload and Assessment - 04.11.2015</a></p>	<p>We anticipate that the literature review part of the course will require the most amount of time, followed by preparing for the presentations. Hence the mark weighting.</p>

<p>The guide above is also available on the Board of Studies Course Proposal Guidelines web page.</p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus.</p>	
<p><b>Sample tutorial/lab sheet questions</b>  <i>[Provide a list of tutorial questions and answers and/or samples of lab sheets.]</i></p> <p>This is for the consideration of the Board of Studies and School of Informatics.</p>	<p>These will be adapted from the current IRR lab sheets and presentation slides. The primary change in the first year will be the addition of security-specific examples for Tutors to use. We will also encourage tutors to use the papers being presented in lecture as examples for students.</p>
<p><b>Exam Information</b>  <i>[How you plan to layout the exam. Please identify if this will be a script book or programming exam]</i></p> <p>This is for the consideration of the Board of Studies and School of Informatics.</p>	<p>The exam will be multiple choice. It will cover the taught portion of the course and will test students' grasp of the technical content as well as the practical and everyday impact of security, privacy, and trust.</p>
<p><b>Sample exam question(s)</b>  <b>THIS IS MANDATORY</b>  <i>[Sample exam questions with model answers to the individual questions are required for new courses. A justification of the exam format should be provided where the suggested format non-standard. The online list of past exam papers gives an idea of what exam formats are most commonly used and which alternative formats have been</i>  <a href="http://www.inf.ed.ac.uk/teaching/exam_papers/">http://www.inf.ed.ac.uk/teaching/exam_papers/.</a>]</p> <p>This is for the consideration of the Board of Studies and School of Informatics.</p>	<p>1. Alice would like to send Bob a message over the Internet from her workplace without letting her employer know 1) who she sent the message to and 2) at what time the message was sent and 3) the content of her message. Which of the following technique[s] would allow her to achieve both her goals.</p> <p>a. She could use Tor to hide both who she sent the message to and also what time she sent it.</p> <p>b. She could use HTTPS, the secure protocol, that would hide the content of the message, and who she sent it to.</p> <p>c. She could use GPG to send an encrypted email to Bob that would hide the content, time it was sent, as well as the destination.</p> <p>d. None of the above since it is impossible to hide who she sent the message to.</p> <p>e. None of the above since it is impossible to hide the time the message was sent from her employer.</p> <p>Answer: e</p>



	<p>2. Differential privacy can protect against the unwanted leakage of information from the results of sensitive queries over private personal information. The sensitivity is a key parameter to know in order to properly tune the differentially private mechanism. Select the best description of what sensitivity is.</p> <p>a. This is the maximum affect one person can have on the statistic that will be used in answering the query.</p> <p>b. This is the maximum noise that will be added to the results of the query in order to hide the presence of an individual in the database.</p> <p>c. This is the minimum difference between two databases over which the query will be computed.</p> <p>d. The sensitivity is not needed, since the added noise is independent of it.</p> <p>e. a and b.</p> <p>Answer: a</p>
<p><b>Any other relevant materials</b>  <i>[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.]</i></p> <p><a href="#">This is for the consideration of the Board of Studies and School of Informatics.</a></p>	<p>NA</p>



#### 4. Course Details/Information

<p><b>Course Availability*</b>  <b>THIS IS MANDATORY</b>  <i>(Please indicate if this course is open to Visiting students.)</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus. This also informs the exam diet(s) and arrangements.</p>	<p><b>If you have selected SS1, please provide a justification as to why the course is not available to Visiting students:</b></p> <p>This course will be open to only the MSc students enrolled in the MSc in Security, Privacy and Trust.</p>
<p><b>Normal Year Taken*</b>  <b>THIS IS MANDATORY</b>   This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus and cannot be changed without creating a whole new course, once it has been entered on EUCLID.</p>	<p>Postgraduate</p>
<p><b>Also available in years *</b>  <b>THIS IS MANDATORY</b></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and the Prospectus.</p>	<p>NA</p>
<p><b>SCQF Credit Points*</b>  <i>Select the credit points (cps) volume for the course based upon multiple units of 10. The volume of credit relates to hours of student learning (not contact hours or scheduled taught time) and one credit point equates to 10 Hours of student learning. The base unit of credit points for a Course at the University of Edinburgh is currently a minimum of 10cps and multiples thereof and for example a 20 cps course would require 200 hours to be made available to the student for learning and would equate to the equivalent of 5 x 40 hour weeks. 0 Credit rated courses which are compulsory, are assessed and students are required to pass to progress are not permitted.</i></p> <p><b>THIS IS MANDATORY</b>   This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus and cannot be changed without creating a whole new course, once it has been entered on EUCLID.</p>	<p>20</p>
<p><b>SCQF Credit Level*</b>  <i>Every course must be assigned a specific level of learning and should align to the principles of the national Scottish Credit and Qualifications Framework (SCQF). The credit level selected will form part of the new course code e.g. HIST09001 where '09' is the SCQF credit level of the course. Guide - <a href="#">SCQF Level Descriptors and Guidelines (2015)</a></i></p> <p><b>THIS IS MANDATORY</b>   This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus and cannot be changed without creating a whole new course, once it has been entered on EUCLID.</p>	<p>11</p>

<p><b>Pre-requisites*</b>  <b>THIS IS MANDATORY</b>  <i>[Specify any courses that a student must have taken to be permitted to take this course. Pre-requisites listed in this section can only be waived by special permission from the School's Curriculum Approval Officer, so they should be treated as "must-have". By default, you may assume that any student who will register for the course has taken those courses compulsory for the degree for which the course is listed in previous years. Please include the FULL course name and course code].</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus.</p>	<p>None beyond being part of the MSc in Security, Privacy, and Trust.</p>
<p><b>Co-requisites*</b>  <b>THIS IS MANDATORY</b>  <i>[Specify any courses that should be taken in parallel with the existing course. Note that this leads to a timetabling constraint that should be mentioned elsewhere in the proposal. Please include the FULL course name and course code].</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus.</p>	<p>None</p>
<p><b>Prohibited Combinations*</b>  <b>THIS IS MANDATORY</b>  <i>[Specify any courses that should not be taken in combination with the proposed course. Please include the FULL course name and course code].</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus.</p>	<p>None</p>
<p><b>Other Requirements/ Additional Information:</b>  <b>THIS IS MANDATORY</b>  <i>[Please list any further background students should have, including, for example, mathematical skills, programming ability, experimentation/lab experience, etc. It is important to consider that unless there are formal prerequisites for participation in a course, other Schools can register their students onto our courses, so it is important to be clear in this section. Also be aware that MSc students are unlikely to have the pre-requisite courses, so alternative knowledge should be recommended. If you want to only permit this by special permission, a statement like "Successful completion of Year X of an Informatics Single or Combined Honours Degree, or equivalent by permission of the School." can be included.]</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus.</p>	<p>Some familiarity with computers and mathematics will be helpful.</p>
<p><b>Visiting Student Pre-requisites</b>  <b>THIS IS MANDATORY</b>  This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus.</p>	<p>NA</p>

<p><b>Any costs to be met by the students?</b>  <i>The University has agreed that its practice with regard to levying additional charges on students should be consistent with the Scottish Executive (SE) / Scottish Funding Council (SFC) guidance. In particular, charges should not be levied for goods, services or facilities that comprise core provision as defined by SE/SFC. Please refer to Governance and Strategic Planning for further information.</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS)</p>	<p>NA</p>
<p><b>Course Organiser*</b>  <i>All courses must have a named Course Organiser.</i></p> <p><b>THIS IS MANDATORY</b></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS).</p>	<p>Kami Vaniea and Tariq Elahi</p>
<p><b>Course Type</b>  <i>Identify the course type</i></p> <p><b>THIS IS MANDATORY</b></p> <p> This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus and cannot be changed without creating a whole new course, once it has been entered on EUCLID.</p>	<p>Standard (usual default)</p>
<p><b>Intended Delivery Period*</b>  <b>THIS IS MANDATORY</b>  <i>(Provide details on the semester the course should be offered in).</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus.</p>	<p>Semester1</p>
<p><b>Default Mode of Study*</b>  <i>These values are used to identify which students are expected to be examined (for examination timetabling, etc.) and/ or whether the student is attending classes. When students are registered on a course, the value recorded here is defaulted in: this can be amended on the students course enrolments at a later date if appropriate</i></p> <p><b>THIS IS MANDATORY</b></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus.</p>	<p>Classes &amp; Assessment (excl. centrally arranged exam)</p>
<p><b>Marking Scheme</b>  <i>The marking scheme under which the course is assessed - <a href="http://www.ed.ac.uk/schools-departments/student-administration/exams/regulations/common-marking-scheme">http://www.ed.ac.uk/schools-departments/student-administration/exams/regulations/common-marking-scheme</a>.</i></p> <p><b>THIS IS MANDATORY</b></p> <p> This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus and cannot be changed without creating a whole new course, once it has been entered on EUCLID.</p>	<p>PG Grade Only</p>

<p><b>Delivery Location*</b> <b>THIS IS MANDATORY</b></p> <p> This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus and cannot be changed without creating a whole new course, once it has been entered on EUCLID.</p>	<p>On Campus</p>
<p><b>Any quotas to be considered?</b> <b>THIS IS MANDATORY</b></p> <p><i>Courses are normally set with no quotas, by default. College doesn't normally allow for quotas, however are there any resourcing restrictions that need to be considered?</i></p> <p>This will appear on the Degree Regulations &amp; Programmes Of Study (DRPS) and Prospectus.</p>	<p>None Quotas will be enforced at the MS degree program level.</p>
<p><b>Timetable Considerations/ Conflicts*</b></p> <p><i>Please specifying any timetabling constraints to be considered (e.g. overlap of popular combinations, other specialism courses, external courses etc).</i></p> <p>This is for the consideration of the Board of Studies and School of Informatics, as well as the administrative and Timetabling staff.</p>	<p>Must not conflict with other security course offerings which currently include: CS, Crypto, Blockchain, SP, and USEC.</p>

**5. Additional Information for College**

<p><b>Academic description:</b>  <b>THIS IS MANDATORY</b>  <i>A more technical summary of the course aims and contents. May include terminology and technical content that might be more relevant to colleagues and administrators than to students.</i>  <i>This is for the consideration of the Board of Studies and School of Informatics</i></p>	<p>In this course security, privacy, and trust are viewed in the context of complex systems and the interactions of users, designers, and implementors with the enabling technological building blocks.</p> <p>At the conclusion of the course the student will have concrete knowledge about a broad range of security, privacy, and trust topics and the issues and challenges inherent therein. They will have experience of reading, digesting, and consolidating the research literature in a number of areas and a deeper grasp in an area of their choosing.</p> <p>The course syllabus will be composed of the following broad areas:</p> <ol style="list-style-type: none"> <li>1. The context of insecure, privacy unaware, and untrustworthy technology.</li> <li>2. Human Factors: user experience, perceptions versus reality, designing systems with humans in the middle.</li> <li>3. OS/Systems/Hardware: access control models, security policies, memory management and attacks, Passwords</li> <li>4. Programming: buffer overflows, time of check-time of use, escalation of privilege, testing and back doors</li> <li>5. Networking: Anonymous communications, distributed ledgers and blockchains, Privacy enhancing technologies, Authentication schemes, Malware</li> <li>6. Crypto: Block ciphers, symmetric crypto, asymmetric crypto, key distribution, zero knowledge.</li> </ol>
<p><b>Syllabus:</b>  <b>THIS IS MANDATORY</b>  <i>Provide a more detailed description of the contents of the course, e.g. a list of bullet points roughly corresponding to the topics covered in each individual lecture/tutorial/coursework.</i>  <i>The description should not exceed 500 words but should be detailed enough to allow a student to have a good</i></p>	<p>The course will follow the philosophy that security, privacy, and trust are viewed in the context of the complete and complex systems and the interactions of users, designers, and implementors. This view helps guide the range of topics as well as the focus of the discussions and knowledge transfer.</p>

*idea of what material will be covered in the course. Please keep in mind that this needs to be flexible enough to allow for minor changes from year to year without requiring new course approval each time.*

This will appear on the Degree Regulations & Programmes Of Study (DRPS) and Prospectus.

We anticipate that there will be about 8-10 one hour lectures that will be given by the instructors, wherein a topic for that module will be introduced, the context given, and the main foundations described and discussed. Each of these topic/module intro lectures will be followed by presentation blocks (given during the regularly scheduled lecture time) where each student will present a paper for 30 mins on that topic that they have selected themselves (from a provided list of papers, but students are free to propose a paper with the instructors permission). Each 30 min presentation will be composed of 10 mins of the highlights of the paper, followed by student-presenter-led discussion (with the instructor guiding the discussion to cover the relevant key learnings of that paper). In conjunction with this activity, each student will be expected read and submit a review for at least 2/5 papers to be presented for each module prior to the date the paper is presented in class. By the end of the course each student will have submitted reviews for about 40% of the papers set in the course. Each module will follow the same format of intro lecture(s) by faculty, followed by student presentations.

To set expectations of the format, the first week will have lectures on the broad context of security, privacy, and trust and a presentation from an existing PhD about their own work.

The above will be consolidated by the work the students will do during the tutorials where they will work on their literature review, which is to be submitted at the end of the course. The ability to read, digest, and critique papers that is developed above will be further consolidated as the student works through their own literature review readings during tutorials. A TA (PhD student in security and privacy or allied area) will guide students as well as peer-reviews students will do of each other's work.

The exam will be comprehensive in nature covering both the instructor led lectures as well as the student led presentations. 1-2 revision lectures are reserved at the end of the course in order to ensure that the key (and testable) material is conveyed with enough clarity and discussed sufficiently.

The course syllabus will be composed of the following areas:

1. The context of insecure, privacy unaware, and untrustworthy technology.

	<p>2. Human Factors: user experience, perceptions versus reality, designing systems with humans in the middle.</p> <p>3. OS/Systems/Hardware: access control models, security policies, memory management and attacks, Passwords</p> <p>4. Programming: buffer overflows, time of check-time of use, escalation of privilege, testing and back doors</p> <p>5. Networking: Anonymous communications, distributed ledgers and blockchains, Privacy enhancing technologies, Authentication schemes, Malware</p> <p>6. Crypto: Block ciphers, symmetric crypto, asymmetric crypto, key distribution, zero knowledge.</p>
<p><b>Relevant QAA Computing Curriculum Sections:</b></p> <p><b>THIS IS MANDATORY</b></p> <p>Please see <a href="https://www.qaa.ac.uk/quality-code/subject-benchmark-statements">https://www.qaa.ac.uk/quality-code/subject-benchmark-statements</a> to check which section the course fits into.</p> <p>This is for the consideration of the Board of Studies and School of Informatics</p>	<p>Software engineering (Note: selected because it is the only QAA section to mention security)</p>
<p><b>Special Arrangements</b></p> <p><i>Any additional information required for the course - e.g. there are limited places available to take this course as an outside elective and non-XX programme specialist students wishing to enrol should first contact the Course Secretary to ascertain availability.</i></p> <p>This is for the consideration of the Board of Studies and School of Informatics</p>	<p>NA</p>
<p><b>Collaboration Information (School/Institution)</b></p> <p><i>Provide full details of the collaborating institution and the nature of their contribution to the course – e.g. Specialist expertise is provided by staff from XX University during weeks 3 to 8 and they also contribute to the exam marking and feedback to students. This equates to 20% of the Course delivery</i></p> <p>This is for the consideration of the Board of Studies, School of Informatics and any collaborative institution/school.</p>	<p>NA</p>

<p><b>% not taught by University of Edinburgh</b></p> <p><i>Where there is formal collaboration with another institution external to the University of Edinburgh in delivering the course, the percentage of their contribution must be recorded.</i></p> <p><i>This is an external reporting requirement to ensure accuracy in our statutory returns when attributing percentage contributions by different institutions to each student's education.</i></p> <p><i>This is for the consideration of the Board of Studies, School of Informatics and any collaborative institution/school.</i></p>	<p>%0</p>
<p><b>Display in Visiting Student Prospectus?</b></p> <p><i>This records whether the course should be displayed in the Visiting Student Prospectus. Where the course is not available to Visiting Students, this must be set to No.</i></p> <p><b>THIS IS MANDATORY</b></p> <p><i>This is for the consideration of the Board of Studies and School of Informatics, as well as the administrative teams.</i></p>	<p>No</p>
<p><b>Course information and publicity</b></p> <p><b>THIS IS MANDATORY</b></p> <p><i>Describe what information will be provided at the start of the academic year in which format, how and where the course will be advertised, what materials will be made available online and when they will be finalised.</i></p> <p><i>Please note that University and School policies require that all course information is available at the start of the academic year including all teaching materials and lecture slides.</i></p> <p><i>This is for the consideration of the Board of Studies and School of Informatics.</i></p>	<p>The course will be publicised as part of the MSc in Security, Privacy, and Trust. As it is a required course it will not be further publicised.</p> <p>Information for the course will be provided through a combination of Learn and a website based in Informatics. Lecture slides for Lecturer-taught sessions will be made available ahead of lectures as per policy. Students will similarly be required to provide slides in advance of giving their talks.</p>
<p><b>Management of teaching delivery</b></p> <p><b>THIS IS MANDATORY</b></p> <p><i>Provide details on responsibilities of each course staff member, how the lecturer will recruit, train, and supervise other course staff, what forms of communication with the class will be used, how required equipment will be procured and maintained. Include information about what support will be required for this from other parties, e.g. colleagues or the Informatics Teaching Organisation.</i></p> <p><i>This is for the consideration of the Board of Studies and School of Informatics</i></p>	<p>The course is designed to have a lead Lecturer who will take 10 credits and two additional lectures who will take 5 credits each. The design is intended to support the breadth of the topic area so that an expert in each topic can give the initial lecture of each module and mark/comment on the presentations.</p> <p>The lead lecturer will coordinate with tutors and provide necessary guidance.</p>
<p><b>Additional Comments</b></p> <p><i>This section summarises comments received from relevant individuals prior to proposing the course. If you have not discussed this proposal with others please note this].</i></p> <p><i>This is for the consideration of the Board of Studies and School of Informatics</i></p>	<p>NA</p>



<p><b>Year Organiser</b> <b>Comments</b></p> <p><b>THIS IS MANDATORY</b></p> <p><i>Year Organisers are responsible for maintaining the official Year Guides for every year of study, which, among other things, provide guidance on available course choices and specialist areas. The Year Organisers of all years for which the course will be offered should be consulted on the appropriateness and relevance on the course. Issues to consider here include balance of course offerings across semesters, subject areas, and credit levels, timetabling implications, fit into the administrative structures used in delivering that year.</i></p> <p><i>This is for the consideration of the Board of Studies and School of Informatics</i></p>	<p>The MSc year organizer(s) were contacted as part of the design of the wider MSc program. We have not contacted about this course in particular, but it was discussed as part of the larger MSc design and consultation.</p>
<p><b>School Curriculum Approval Officer</b> <b>Comments</b></p> <p><b>THIS IS MANDATORY</b></p> <p><i>The School Curriculum Approval Officer (SCAO) oversees the <a href="#">Degree Programme Tables for Informatics</a>, to ensure they remain consistent with University regulations and to implement decisions of the Informatics Board of Studies. SCAO is also responsible for validating the relationship between individual student study and the various Informatics degree programmes.</i></p> <p><i>This is for the consideration of the Board of Studies and School of Informatics.</i></p>	<p>SCAO was contacted as part of the design of the wider MSc program. We have not contacted about this course in particular, but it was discussed as part of the larger MSc design and consultation.</p>
<p><b>BoS Academic Secretary</b> <b>Comments</b></p> <p><b>THIS IS MANDATORY</b></p> <p><i>Any proposal has to be checked by the Secretary of the Board of Studies prior to discussion at the actual Board meeting. This is a placeholder for their comments, mainly on the formal quality of the content provided above.</i></p> <p><i>This is for the consideration of the Board of Studies and School of Informatics</i></p>	

## 6. Proposer

<b>Proposer's Name</b>	Kami Vaniea and Tariq Elahi
<b>Email Address</b>	2018-11-27
<b>Date Proposed</b>	t.elahi@ed.ac.uk