Meeting No. 2/2017 of the RSCS Curriculum Development Committee will be held on
Thursday 30 March 2017 at 12pm
in Room R212, Ian Ross Building (31).

Apologies and enquiries should be sent to: Melissa.Coppin@anu.edu.au

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**Agenda Summary**

**Part 1 – Procedural matters**

1. Announcements and Apologies  
   For information  
   2

2. Minutes  
   Recommendation: That the Committee confirm the minutes of the meeting 1/2017.  
   Attachment: Appendix 2A – Minutes of RSCS CDC Meeting 1/2017  
   For decision  
   2

3. Matters Arising from Minutes and Action Items  
   For information  
   2

4. Confidential Items  
   For information  
   2

**Part 2 – Reports**

5. Report from the Chair  
   For information  
   3

6. Report from Program Convenors  
   For information  
   3

**Part 3 – Curriculum Proposals**

7. Curriculum Proposals  
   Recommendation: That the Committee endorse the proposals for submission to the CECS Education Committee.  
   Attachment: Appendix 7A – RSCS Curriculum Proposals  
   For decision  
   4

**Part 4 – Items of other business**

8. Meeting Dates  
   For information  
   74

9. Other business and question time  
   For discussion  
   74
Part 1 – Procedural Matters

Item 1  Announcements and Apologies

1.1 Apologies
To be received

1.2 Announcements

Item 2  Minutes

Purpose
To confirm the minutes of the RSCS CDC Committee Meeting 1/2017, held on 28 February 2017.

Recommendation
That the Committee confirm the minutes of the meeting 1/2017.

ACTION REQUIRED
For discussion ☐  For decision ✓  For information ☐  For response ☐

Appendices
Appendix 2A – Unconfirmed Minutes RSCS 1/2017

Item 3  Matters Arising from the Minutes

For the Committee to raise and note any matters arising from the Minutes.

Item 4  Confidential Items

Consistent with the policy and practice of Council, all matters in the agenda of the University Education Committee relating to individual persons, including appointments, enrolment, candidacy for degrees, personal details, performance and conduct are declared to be confidential. If any member wishes to raise a confidential matter in relation to any other item, he or she should do so under this Item. After consideration of the confidential items, observers will be admitted to the meeting.
Part 2 - Reports

Item 5   Report from the Chair

**Purpose**
To receive a report on the current issues in the Education portfolio

**Recommendation**
That the Committee note the report.

**ACTION REQUIRED**
For discussion ☐  For decision ☐  For information ☑  For response ☐

Item 6   Report from Program Convenors

**Purpose**
To receive a report on the current issues in each Program

**Recommendation**
That the Committee note the report.

**ACTION REQUIRED**
For discussion ☐  For decision ☐  For information ☑  For response ☐
Part 3 – Curriculum Proposals

Item 7  Research School of Computer Science

Purpose
To review curriculum proposals from the Research School of Computer Science submitted to the Committee for their endorsement.

Recommendation
That the Committee review the below proposals and endorse them for submission to the CECS Education Committee.

ACTION REQUIRED
For discussion ☐  For decision ☑  For information ☐  For response ☐

Background

Program/Plan Amendment

<table>
<thead>
<tr>
<th>Page</th>
<th>Code</th>
<th>Title and brief description of proposed amendments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>6706XGDCP</td>
<td>Graduate Diploma of Computing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Update to overall Program requirements in line with MCOMP review changes</td>
</tr>
<tr>
<td>17</td>
<td>7706XMCOMP</td>
<td>Master of Computing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Update to overall Program requirements in line with MCOMP review changes</td>
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<td>29</td>
<td>VCOMP</td>
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New Subplan

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<tr>
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<td>Specialisation</td>
<td>Data Science</td>
</tr>
<tr>
<td>42</td>
<td>Specialisation</td>
<td>Human Centred Design and Software Development</td>
</tr>
<tr>
<td>44</td>
<td>Major</td>
<td>Cyber Security</td>
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</table>

Subplan Amendment

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<td>46</td>
<td>AINT-SPEC</td>
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New Courses

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<tr>
<th>Page</th>
<th>Course Code</th>
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<tbody>
<tr>
<td>48</td>
<td>COMP 6120</td>
<td>Software Engineering</td>
</tr>
<tr>
<td>52</td>
<td>COMP 6420</td>
<td>Introduction to Data Management, Analysis and Security</td>
</tr>
<tr>
<td>55</td>
<td>COMP 6445</td>
<td>Advanced Computing Research Methods</td>
</tr>
<tr>
<td>Page</td>
<td>Course Code</td>
<td>Title and brief description of proposed amendments</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>59</td>
<td>COMP 1040</td>
<td>The Craft of Computing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Add COMP6730 and COMP7230 to requisite statement as incompatible courses</td>
</tr>
<tr>
<td>62</td>
<td>COMP 2400</td>
<td>Relational Databases</td>
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<td></td>
<td></td>
<td>• Add COMP7240 to requisite statement as an incompatible course.</td>
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<tr>
<td>65</td>
<td>COMP 3630</td>
<td>Theory of Computation</td>
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<td></td>
<td></td>
<td>• Add COMP1100 and COMP1600 to requisite statement due to courses re-coding.</td>
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<tr>
<td>68</td>
<td>COMP 6240</td>
<td>Relational Databases</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Add COMP7240 to requisite statement as an incompatible course.</td>
</tr>
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<td>71</td>
<td>COMP 6730</td>
<td>Programming for Scientists</td>
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<tr>
<td></td>
<td></td>
<td>• Add COMP7230 and COMP1040 to requisite statement as incompatible courses</td>
</tr>
</tbody>
</table>

**Sponsor**
Associate Director (Education)
Research School of Computer Science

**Appendices**
**Appendix 7A** – RSCS Curriculum Proposal forms
Amendment to Academic Award (Coursework)

How to use this form

If you intend to change any of the following details, please instead complete a New Academic Award (Coursework) Expression of Interest / Proposal. Fields for these details are marked with © throughout this form. Changes in marked fields will not be approved or processed.

- Award name
- Augmentation name (Masters Degrees only)
- Australian Qualifications Framework qualification level and type
- Full-time duration in years
- Units required for completion

A significant change to mode of delivery (e.g. becoming 100% online or offshore) may require a Award proposal. In such cases, please email policyregs@anu.edu.au to discuss.

Expected turn-around times (after College Education Committee endorsement)

<table>
<thead>
<tr>
<th>Amendment requirement</th>
<th>Turn-around time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amendment requiring no revision or further information</td>
<td>Three months</td>
</tr>
<tr>
<td>Amendment requiring some revision or further information</td>
<td>Six months</td>
</tr>
<tr>
<td>Amendment requiring some revision or further information, and further consultation</td>
<td>Nine months</td>
</tr>
</tbody>
</table>

Please note that turnaround times are for ANU accreditation. Changes to international fee places, mode of delivery or work-based training requirements may affect CRICOS registration and require additional time.

To fill out this Microsoft Word Form, click underlined italicised grey text, e.g. 41T, then make a selection or enter text.

To edit the program title and code in the document header, first double click in the header area. Once edited, the header will be updated on all pages.

Long-answer text fields allow the use of standard formatting features, such as bullet points, and will span pages if necessary.

If you would like to provide feedback on this form, please email policyregs@anu.edu.au. Attachments with comments and/or tracked changes are welcome.

Details

<table>
<thead>
<tr>
<th>Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Award name</td>
<td>Graduate Diploma of Computing ©</td>
</tr>
<tr>
<td>Masters Augmentation (where relevant)</td>
<td>41T ©</td>
</tr>
</tbody>
</table>
Amendment to Academic Award

Plan code 6706XGDCP

Australian Qualifications Framework level and Award type Level 8 - Graduate Diploma

External accreditation body (if any) 41T

Full-time duration in years 1

Units required for completion 48

Amendment effective from: 1 January 2018
(Nota: all amendments effective 1 January)

Linked qualifications
- If this is a pathway or an exit Award, please name the linked Awards. For information on pathways and exit Awards, please see Policy: Academic Programs and Courses Accreditation

41T

Double degrees
- Is this plan part of a double degree?
  - Flexible Double Degree (Arts, Social Sciences, Sciences and Business 4 Year)
  - Flexible Double Degree (Arts, Social Sciences, Sciences and Business 5 Year)
  - Flexible Double Degree (Law, Engineering and Advanced Computing 6 Year)
  - Flexible Double Degree (Law)
  - Flexible Double Degree (Engineering and Advanced Computing)
  - Vertical Double Degree
  - Double Masters Degree

Governance

Responsible College ANU College of Engineering & Computer Science

Who is the convener of the Award? Dr Lynette Johns-Boast

Does this Award have a dedicated governance committee or advisory board (other than College Education Committee)? If so, detail membership and frequency of meetings.

41T

Have proposed changes been endorsed by the governance committee or advisory board? No - these changes have not been endorsed

Summary

Provide an executive summary of this proposal for University Education Committee and Academic Board (100 words or fewer).

This program serves a dual purpose: (a) to provide a pathway for both international and domestic students to the MCOMP for those without a CS bachelor degree or where they did not do well enough in their bachelor studies to gain direct entry to our Masters program; and (b) for domestic students it provides a valued mechanism to update or extend existing qualifications in the shortest time possible.
Amendment to Academic Award

During a review of the program carried out in S2 2016 by RSCS, feedback received from our Industry Advisory Board and students, both domestic and international, indicated that the existing structure was not allowing the program to meet its dual purpose as well as it might.

The new structure enables these two goals to be met more effectively and has the potential to grow domestic enrolment.

Consultation

Complete fields in this section only where consultation has been undertaken.

Academic consultation
- Includes ANU and external consultation about academic merit and strategic alignment, contribution to teaching, cross-College disciplines, and cross-College pathway degrees
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Division of Student Administration
- Includes degree structures, nomenclature, AQF and legislative compliance, Commonwealth support, CRICOS eligibility
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Division of Student Services
- Includes support for specific cohorts, international students under the age of 18
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Division of International Operations and Student Recruitment
- Includes admissions, student recruitment, international agreements, international experiences, University publications
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Information Technology Services
- Includes support for specific software and infrastructure needs
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with ANU Library
- Includes access to specific online and physical collections, specialist information literacy training
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.
Amendment to Academic Award

Note that insufficient consultation may preclude or delay approval or implementation

**Description and requirements**

**Complete fields in this section only if the current details are being changed.**

**Marketing and publication description**

- This section is published on the 'Programs and Courses' website to an external audience and is used primarily for marketing.
- Describe the Award including any key features, its research led elements and any external accreditation of the plan (100 words of fewer).

The Graduate Diploma of Computing is for graduates from any discipline who wish to up-skill, or for computing graduates who wish to refresh and enhance existing computing skills in the shortest time possible. The Graduate Diploma of Computing provides its graduates with a pathway into the IT industry or to more advanced study in the computing discipline.

The Graduate Diploma of Computing provides graduates with a strong foundational knowledge and skills in problem solving, programming and the mathematics required to continue with more advanced study in the computing discipline or to acquire and develop entry level skills and knowledge. The program provides students with the opportunity to investigate a wide range of specialist areas which can be used as the basis for further study or for a new career involving computing.

Students obtaining a GPA of 5 or above in the Graduate Diploma in Computing may be granted up to one year of credit into the Master of Computing (MCOMP). When planning to transfer to the MCOMP on completion, students will need to take care selecting their elective courses to allow for maximum credit and a smooth transition into the MCOMP. For advice, please book an appointment with the Program Convenor.

**Study requirements and Orders**

- Provide requirements for the completion of this Award.
- New courses must be approved before being entered into requirements.
- For Vertical Double Degree undergraduate plans and Double Masters Degrees, provide full requirements for the double degree (i.e. both Awards).
- Orders will be drafted by the Academic Standards and Quality Office for confirmation of the appropriate ANU College Associate Dean to then be made by the Deputy Vice-Chancellor (Academic) (see Undergraduate Awards Rules and Graduate Awards Rules).
- This section is published on the 'Programs and Courses' website to an external audience.

The Graduate Diploma of Computing requires the completion of 48 units, which must consist of:

24 units from completion of the following compulsory courses:

- COMP6710 Introduction to Software Systems
- MATH6005 Mathematics for Computing
- COMP6250 Professional Practice 1

Completion of 6 units from the following courses:

- COMP6442 Software Construction
- COMP6730 Programming for Scientists

The Graduate Diploma of Computing
Amendment to Academic Award

Completion of a further 24 units of 6000 – 8000-series computing courses.

Learning outcomes

- Learning outcomes are high-level statements of the skills and knowledge which ANU certifies that all graduates of the Award possess.
- For Vertical Double Degrees and Double Masters Degrees, provide full learning outcomes for both degrees.
- This section is published on the ‘Programs and Courses’ website to an external audience.

Upon successful completion, students will be able to:

1. Design, implement programmatically, and evaluate a solution for a well-defined problem.
2. Demonstrate an understanding of the systems context in which software is developed and operated.
3. Communicate complex concepts effectively with a diverse audience using a range of modalities
4. Depending upon the elective courses a student chooses, they will be able variously to
   a. Apply a range of data modelling, management, analytics and visualisation techniques to extract value from structured and unstructured data
   b. Demonstrate an understanding of a variety of computer systems approaches and architectures
   c. Apply of a variety of approaches to understanding and developing software systems

Admission requirements

Undergraduate

- ATAR, QLD Band and International Baccalaureate score.
- Include any other requirements, such as current ‘Working with Vulnerable People’ check, successful medical check, etc.
- Include secondary schooling prerequisites
- This section is published on the ‘Programs and Courses’ website to an external audience.

Honours plans (without specialisations)

- Complete the template below only if the admission requirements are being amended
- Delete text in brackets if not required.
- Delete numbered items if not required. Note: Item 1 is not required if the degree name is specified.
- Choose only one option from a, b or c.
- A maximum of 12 courses may be specified.

An AQF Level 7 Bachelor [of discipline] degree or equivalent, completed within the last two years:

1. in a cognate discipline
2. with a weighted average mark equivalent to an ANU 70 per cent calculated from the 36 units (i.e. 0.75 EFTSL) of courses in cognate disciplines, excluding 1000-level courses (i.e. introductory undergraduate courses), with the highest marks.
3. with at least:
   a. courses in the subject area _____ [with at least _____ 3000-level courses or equivalent].
   b. a [major][minor][specialisation] or equivalent in _____ .
   c. with the following courses or equivalent:
4. with the written approval of an identified supervisor for the research project
Amendment to Academic Award

with the written approval of an identified supervisor for the thesis

Honours plans (with specialisations)
- Complete the template below only if the admission requirements are being amended
- Delete text in brackets if not required.
- Delete Item 1 if the degree name is specified.

An AQF Level 7 Bachelor [of discipline] degree or equivalent, completed within the last two years:
1. in a cognate discipline
2. with a weighted average mark equivalent to an ANU 70 per cent calculated from the 36 units (i.e. 0.75 EFTSL) of courses in the discipline cognate to the honours specialisation, excluding 1000-level courses (i.e. introductory undergraduate courses), with the highest marks.
3. and the satisfaction of any further requirements specified in the relevant honours specialisation.

Direct-entry Graduate Coursework
- Complete the template below only if the admission requirements are being amended
- Final admission requirements will be drafted by the Academic Standards and Quality Office for confirmation of the appropriate ANU College Associate Dean.
- This section is published on the ‘Programs and Courses’ website to an external audience.

A Bachelor degree or international equivalent
- with a GPA of 4
- with at least 3 years’ work experience in a relevant domain may be admitted on a case by case basis.

Cognate disciplines (Honours and Graduate coursework only)
- List each discipline considered to be ‘cognate’ for the purposes of admission and credit on a new line.
- This section is published on the ‘Programs and Courses’ website to an external audience.

Applicants with a Bachelor degree that includes formal programming courses may receive exemption for one of the following courses:
- COMP6710 Introduction to Software Systems
- COMP6730 Programming for Scientists

Applicants with a Bachelor degree that includes an equivalent mathematics course may receive exemption for
- MATH6005 Mathematics for Computing

Applicants with professional work experience may receive credit or exemption for
- COMP6250 Professional Practice 1

Delivery
Current delivery mode(s): In person - 75% or more on campus, maximum 25% of courses online

New delivery mode(s) if changing:
- □ Will now include compulsory work-based training of 41T hours per week for 41T weeks.

6 | THE AUSTRALIAN NATIONAL UNIVERSITY
Amendment to Academic Award

☐ No longer includes compulsory work-based training

☐ Will now be off campus – this Award is now to be administered and completed externally to the Acton campus.

☐ No longer off campus – this Award is now to be administered and completed at the Acton campus.

☐ Will now be Intensive – this Award is now to be completed by undertaking accelerated courses, i.e. courses that are undertaken in a full-time block rather than across a semester.

   Intensive duration in weeks (from commencement to submission of final assessment): 41T

☐ No longer intensive – this Award is no longer to be completed by undertaking accelerated courses, i.e. courses that are undertaken in a full-time block rather than across a semester.

☐ Will now be registered on CRICOS (subject to assessment by TEQSA).

☐ No longer to be registered on CRICOS.

List all teaching periods in which students may commence study.

- i.e. Summer, First Semester, Autumn, Winter, Second Semester and/or Spring
- Note that international student visa holders must be able to complete within the normal duration of study without the need to ‘underload’ or take leave.

First Semester, Second Semester

☒ International student visa holders are able to complete within the normal duration of study without the need to ‘underload’ or take leave when commencing in all listed teaching periods.

ANU Graduate Coursework model (Graduate Coursework only)

☐ This Award is consistent with the University’s Graduate Coursework Model

☒ This Award requires approval as an exception to the ANU Graduate Coursework model.

- For low-enrolment Graduate Certificates and Graduate Diplomas, provide a strategic case for retention of this Award and attach all available evidence.
- For Masters Degrees requiring more or less than 96 units, or with admission requirements other than a non-cognate Bachelor Degree, provide significant justification for creation of this Award (e.g. professional accreditation or international standards) and attach all available evidence.

Despite low enrolment numbers, 17 students commencing in semester 1, 2017, this program provides an important pathway to a professionally recognised program of study for students who did not study within the computing domain during their undergraduate year. Enrolment numbers are slowly increasing, especially domestic student enrolment.

Assessment alignment (Bachelor Honours Degrees only)

- If the learning outcomes are being amended, provide an explanation of how the structure of assessment determines whether the Honours learning outcomes have been met.

41T

Timing of Honours assessment (Bachelor Honours Degrees only)
Amendment to Academic Award

- If the Study requirements and Orders are being amended, provide an explanation of how either: a minimum of 25% of the assessment which contributes to the final honours grade or; 15% of the assessment which contributes to the final Honours mark and formalised monitoring of progress by staff other than each student’s supervisor or Honours convener is completed in the first half (in terms of duration) of Honours study.

Honours research training availability (Bachelor Honours Degrees only)
- If the Study requirements and Orders or the teaching periods in which students may commence study are being amended, and Honours research training courses are to be available to students only once per calendar year, describe the strategies to be used to ensure that students who commence Honours in the Period in which these courses are not taught will not be disadvantaged.

Research component (Masters Degrees only)
- Provide an explanation of and list of courses for how the AQF Level 9 Masters Degree (Coursework) requirement that graduates must be able to "plan and execute a substantial research-based project, capstone experience and/or piece of scholarship" is demonstrated.

Typical full-time pattern of study

Complete fields in this section only if the current details are being changed.

Provide typical full-time patterns of study f for each teaching period in which students may commence study.
- Each study pattern should demonstrate completion of the Orders given above in the full-time duration.
- Give the course type, level and unit value in each cell (see Examples below).
- Cells should be merged for courses of 12 or more units.
- Copy and paste rows as needed

Students commencing in Semester 1 and planning to continue to the Master of Computing

<table>
<thead>
<tr>
<th>Year 1</th>
<th>COMP6710 Structured Programming 6 units</th>
<th>COMP6250 Professional Practice 1 6 units</th>
<th>MATH6005 Discrete Mathematical Models 6 units</th>
<th>Computing Elective 6 Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP6442 Software Construction / COMP6730 Programming for Scientists 6 units</td>
<td>COMP8260 Professional Practice 2 6 units</td>
<td>COMP6340 Relational Databases 6 units</td>
<td>Computing Elective 6 units</td>
<td></td>
</tr>
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</table>

Students commencing in Semester 2 and planning to continue to the Master of Computing

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8 | THE AUSTRALIAN NATIONAL UNIVERSITY
Amendment to Academic Award

<table>
<thead>
<tr>
<th>Year 1</th>
<th>COMP6710 Structured Programming / COMP6730 Programming for Scientists 6 units</th>
<th>COMP6250 Professional Practice 1 6 units</th>
<th>COMP6240 Relational Databases 6 units</th>
<th>Computing Elective 6 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP6710</td>
<td>COMP6710 Structured Programming / COMP6442 Software Construction 6 units</td>
<td>COMP6260 Professional Practice 2 6 units</td>
<td>COMP6340 Networked Information Systems 6 units</td>
<td>MATH6005 Mathematics for Computing 6 units</td>
</tr>
</tbody>
</table>

Fees

Current fee places: Commonwealth Support, Domestic Tuition Fees and International Student Fees

New fee places if changing:

- For Awards adding International Student Fee places, identify an existing Award with the same indicative international student fee (see the annual fee schedule).

[Click here to enter text]

- Provide details of additional costs, such as compulsory fieldwork expenses (excludes SA Fee).

41T

Division of Student Administration use only

☐ Consistent with Australian Qualifications Framework, including Level 9 research component where relevant

If not consistent, give details:

41T

☐ Consistent with National Code 2007

If not consistent, give details:

41T

☐ Consistent with policy: Academic Programs and Courses Accreditation

If not consistent, give details:

41T

☐ Consistent with policy: Nomenclature

If not consistent, give details:

41T

☐ Consistent with policy: Structure and Wording of Coursework Award Requirements, including Registrar approval

If not consistent, give details:

41T

Comment [LJ2]: Should this be amended to allow for CSP?
Amendment to Academic Award

☐ Consistent with other relevant University policies and standards (e.g. Admission requirements template)
If not consistent, give details: 41T

Is this becoming the default plan within a single degree program?

☐ Australian Higher Education Graduate Statement is appropriate and accurate
If not appropriate/accurate, provide new AHEGS below (copy and paste for multiple plans as necessary).

Detail of Plan - Australian Higher Education Graduation Statement (AHEGS)

U

Plan Features - Australian Higher Education Graduation Statement (AHEGS)

U

Plan Pathway - Australian Higher Education Graduation Statement (AHEGS)

U

Plan Accreditation - Australian Higher Education Graduation Statement (AHEGS)

U

College Education Committee

Date reviewed by College Education Committee (CEC) 41T

CEC recommendation to UEC
- Endorse with no conditions
- Endorse with conditions (specified below)
- Do not endorse

41T

As approved by the Dean or delegated authority 41T on 41T

University Education Committee

Date reviewed by University Education Committee (UEC) 41T

Document Number 41T

UEC recommendation to Academic Board
- Accredit with no conditions
- Accredit with conditions (specified below)
- Do not accredit

41T
Amendment to Academic Award

Academic Board

Date considered by Academic Board 41T
Document Number 41T

Academic Board

- Accredits with no conditions from 41T
- Accredits with conditions (specified below) from 41T
- Does not accredit

41T
Amendment to Academic Award (Coursework)

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| Amendment requiring some revision or further information | Six months |
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Details

| Award name | Master of Computing ☀ |
| Masters Augmentation (where relevant) | 41T ☀ |
Plan code 7706XMCOMP

Australian Qualifications Framework level and Award type Level 9 - Masters Degree (Coursework)

External accreditation body (if any) Australian Computer Society

Full-time duration in years 2

Units required for completion 96

Amendment effective from: 1 January 2018
(Note: all amendments effective 1 January)

Linked qualifications
- If this is a pathway or an exit Award, please name the linked Awards. For information on pathways and exit Awards, please see Policy: Academic Programs and Courses Accreditation

Double degrees
- Is this plan part of a double degree?
  - [ ] Flexible Double Degree (Arts, Social Sciences, Sciences and Business 4 Year)
  - [ ] Flexible Double Degree (Arts, Social Sciences, Sciences and Business 5 Year)
  - [ ] Flexible Double Degree (Law, Engineering and Advanced Computing 6 Year)
  - [ ] Flexible Double Degree (Law)
  - [ ] Flexible Double Degree (Engineering and Advanced Computing)
  - [ ] Vertical Double Degree
  - [ ] Double Masters Degree

Governance

Responsible College ANU College of Engineering & Computer Science

Who is the convener of the Award? Dr Lynette Johns-Boast

Does this Award have a dedicated governance committee or advisory board (other than College Education Committee)? If so, detail membership and frequency of meetings.

Have proposed changes been endorsed by the governance committee or advisory board? No - these changes have not been endorsed

Summary

Provide an executive summary of this proposal for University Education Committee and Academic Board (100 words or fewer).

The Master of Computing program enrolls students from very diverse backgrounds: from Economics and Linguistics through Science and Engineering to those with a strong Bachelor degree in a computing discipline. The diverse background of enrolled students, the apparent flexibility of the program rules, and the
requirement not to specify pre-requisite courses that are not required as part of the program itself gave rise to many difficulties for students when trying to pick a suitable pathway through the options available to them.

The RSCS conducted a review of the program in S2 2016. Quantitative data was collected and analysed and qualitative data was collected from our Industry Advisory Board, Agents, graduates of the program, and a diverse range of currently enrolled students. This data was analysed and a proposed new program structure was tested with students. The new data was analysed and has resulted in the changes proposed in this document.

Consultation

Complete fields in this section only where consultation has been undertaken.

Academic consultation

- Includes ANU and external consultation about academic merit and strategic alignment, contribution to teaching, cross-College disciplines, and cross-College pathway degrees
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Division of Student Administration

- Includes degree structures, nomenclature, AQF and legislative compliance, Commonwealth support, CRICOS eligibility
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Division of Student Services

- Includes support for specific cohorts, international students under the age of 18
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Division of International Operations and Student Recruitment

- Includes admissions, student recruitment, international agreements, international experiences, University publications
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Information Technology Services

- Includes support for specific software and infrastructure needs
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with ANU Library
• Includes access to specific online and physical collections, specialist information literacy training
• Include evidence of consultation, such as meeting dates, links to published minutes, etc.

41T

Note that insufficient consultation may preclude or delay approval or implementation

Description and requirements

Complete fields in this section only if the current details are being changed.

Marketing and publication description

• This section is published on the ‘Programs and Courses’ website to an external audience and is used primarily for marketing.
• Describe the Award including any key features, its research led elements and any external accreditation of the plan (100 words of fewer).

The Master of Computing is a 2-year full-time (or equivalent part-time) degree with two target audiences: graduates without a computing background who wish to acquire a solid knowledge of computing, and graduates with a computing or information technology background who wish to broaden and deepen or refresh their knowledge. The program is professionally accredited by the Australian Computer Society.

Master of Computing graduates will develop a deep knowledge and understanding of professional software development and computing practices. Students have the opportunity to participate in many cutting edge courses and, depending upon their background and interests, may choose to specialise in artificial intelligence, human centred design and software development, or data science. The program culminates in a capstone project: either working in small groups with industry partners, with researchers, or in start-ups; or by undertaking a small research project supervised by an academic.

Students with a computing or information technology Bachelor degree or Graduate Diploma may receive up to 48 units of credit allowing them to complete the program in less than the usual 2-year time frame.

On completion of 48 units, students may exit with a Graduate Diploma of Computing.

Students completing the Master of Computing with a GPA greater than 6 may transfer to the Master of Computing (Advanced) with up to 48 units of credit.

Study requirements and Orders

• Provide requirements for the completion of this Award.
• New courses must be approved before being entered into requirements.
• For Vertical Double Degree undergraduate plans and Double Masters Degrees, provide full requirements for the double degree (i.e. both Awards).
• Orders will be drafted by the Academic Standards and Quality Office for confirmation of the appropriate ANU College Associate Dean to then be made by the Deputy Vice-Chancellor (Academic) (see Undergraduate Awards Rules and Graduate Awards Rules).
• This section is published on the ‘Programs and Courses’ website to an external audience.

The Master of Computer Science requires the completion of 96 units, which must consist of:

36 units from completion of the following compulsory courses:

COMP6710 Introduction to Software Systems
COMP6442 Software Construction
COMP6250 Professional Practice 1
COMP8260 Professional Practice 2
COMP8110 Managing Software Development
MATH6005 Mathematics for Computing

6 units from one of the following courses:
COMP6120 Software Engineering; or
COMP8190 Model-Driven Software Development

6 units from one of the following courses:
COMP6240 Relational databases; or
COMP6420 Introduction to Data Management, Analysis and Security

6 units from one of the following courses:
COMP6340 Networked Information Systems
COMP6331 Computer Networks

12 units from one of the following courses:
COMP8715 Computing Project
COMP8755 Individual Computing Project

30 units from completion of additional COMP courses including at least 12 units of 8000 series courses.

Students may choose to use 24 units to complete one of the following specialisations:

- Artificial Intelligence
- Data Science
- Human Centred Design and Software Development

Unless otherwise stated, a course used to satisfy the requirements of one specialisation may not be double counted towards satisfying the requirements of another specialisation.

A minimum of 36 units must come from completion of 8000-level courses.

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Learning outcomes

- Learning outcomes are high-level statements of the skills and knowledge which ANU certifies that all graduates of the Award possess.
- For Vertical Double Degrees and Double Masters Degrees, provide full learning outcomes for both degrees.
- This section is published on the ‘Programs and Courses’ website to an external audience.

Upon successful completion, students will be able to:

1. Professionally apply systematic computing approaches to address complex, multi-disciplinary real-world computing problems in a variety of domains.
2. Synthesise and proficiently apply advanced, integrated technical knowledge from their specialisation and other elective areas of study and the underpinning sciences and computational methods.
3. Identify and critically evaluate current developments and emerging trends within their specialization and other elective areas of study.

4. Understand the contextual factors that influence professional computing practice, and identify the potential societal, ethical, and environmental impact of computing activities.

5. Communicate effectively with colleagues, other computing professionals and the broader community employing a range of communication media and tools.

6. Engage in independent investigation, critical reflection and lifelong learning to continue to practice at the forefront of the discipline.

7. Work effectively and proactively within cross-cultural, multi-disciplinary teams, demonstrating autonomy, ethical conduct, expert judgement, adaptability and responsibility to achieve computing outcomes at a high standard.

Admission requirements

Undergraduate

- ATAR, QLD Band and International Baccalaureate score.
- Include any other requirements, such as current ‘Working with Vulnerable People’ check, successful medical check, etc.
- Include secondary schooling prerequisites
- This section is published on the ‘Programs and Courses’ website to an external audience.

Honours plans (without specialisations)

- Complete the template below only if the admission requirements are being amended
- Delete text in brackets if not required.
- Delete numbered items if not required. Note: Item 1 is not required if the degree name is specified.
- Choose only one option from a, b or c.
- A maximum of 12 courses may be specified.

**An AQF Level 7 Bachelor [of discipline] degree or equivalent, completed within the last two years:**

1. in a cognate discipline

2. with a weighted average mark equivalent to an ANU 70 per cent calculated from the 36 units (i.e. 0.75 EFTSL) of courses in cognate disciplines, excluding 1000-level courses (i.e. introductory undergraduate courses), with the highest marks.

3. with at least:
   a. ______ courses in the subject area ______ [with at least ______ 3000-level courses or equivalent].
   b. a [major][minor][specialisation] or equivalent in ______.
   c. with the following courses or equivalent:

4. with the written approval of an identified supervisor for the research project

   with the written approval of an identified supervisor for the thesis

Honours plans (with specialisations)

- Complete the template below only if the admission requirements are being amended
- Delete text in brackets if not required.
- Delete Item 1 if the degree name is specified.

**An AQF Level 7 Bachelor [of discipline] degree or equivalent, completed within the last two years:**

1. in a cognate discipline
2. with a weighted average mark equivalent to an ANU 70 per cent calculated from the 36 units (i.e. 0.75 EFTSL) of courses in the discipline cognate to the honours specialisation, excluding 1000-level courses (i.e. introductory undergraduate courses), with the highest marks.
3. and the satisfaction of any further requirements specified in the relevant honours specialisation.

Direct-entry Graduate Coursework

- Complete the template below only if the admission requirements are being amended
- Final admission requirements will be drafted by the Academic Standards and Quality Office for confirmation of the appropriate ANU College Associate Dean.
- This section is published on the ‘Programs and Courses’ website to an external audience.

A Bachelor degree or international equivalent

- with a GPA of 5 or
- with at least 3 years’ work experience in in a relevant domain and a Bachelor degree with a GPA of less than 5 but greater than 4 may be admitted on a case by case basis.

Cognate disciplines (Honours and Graduate coursework only)

- List each discipline considered to be ‘cognate’ for the purposes of admission and credit on a new line.
- This section is published on the ‘Programs and Courses’ website to an external audience.

Applicants with a Bachelor degree or Graduate Diploma that includes formal programming courses may receive credit or exemption for

COMP6710 Introduction to Software Systems

Applicants with a Bachelor degree or Graduate Diploma that includes an equivalent mathematics course may receive credit exemption for

MATH6005 Mathematics for Computing

Applicants with professional work experience may receive credit or exemption for

COMP6250 Professional Practice I

Those applicants with significant professional and managerial experience may receive credit or exemption for

COMP8260 Professional Practice II

Delivery

Current delivery mode(s): In person - 75% or more on campus, maximum 25% of courses online

New delivery mode(s) if changing:

☐ Will now include compulsory work-based training of 41T hours per week for 41T weeks.
☐ No longer includes compulsory work-based training
☐ Will now be off campus – this Award is now to be administered and completed externally to the Acton campus.
☐ No longer off campus – this Award is now to be administered and completed at the Acton campus.

☐ Will now be Intensive – this Award is now to be completed by undertaking accelerated courses, i.e. courses that are undertaken in a full-time block rather than across a semester.

   Intensive duration in weeks (from commencement to submission of final assessment): 41T

☐ No longer intensive – this Award is no longer to be completed by undertaking accelerated courses, i.e. courses that are undertaken in a full-time block rather than across a semester.

☐ Will now be registered on CRICOS (subject to assessment by TEQSA).

☐ No longer to be registered on CRICOS.

List all teaching periods in which students may commence study.

- i.e. Summer, First Semester, Autumn, Winter, Second Semester and/or Spring
- Note that international student visa holders must be able to complete within the normal duration of study without the need to ‘underload’ or take leave.

First Semester, Second Semester

☐ International student visa holders are able to complete within the normal duration of study without the need to ‘underload’ or take leave when commencing in all listed teaching periods.

ANU Graduate Coursework model (Graduate Coursework only)

☐ This Award is consistent with the University’s Graduate Coursework Model

☐ This Award requires approval as an exception to the ANU Graduate Coursework model.

- For low-enrolment Graduate Certificates and Graduate Diplomas, provide a strategic case for retention of this Award and attach all available evidence.

- For Masters Degrees requiring more or less than 96 units, or with admission requirements other than a non-cognate Bachelor Degree, provide significant justification for creation of this Award (e.g. professional accreditation or international standards) and attach all available evidence.

41T

Assessment alignment (Bachelor Honours Degrees only)

- If the learning outcomes are being amended, provide an explanation of how the structure of assessment determines whether the Honours learning outcomes have been met.

41T

Timing of Honours assessment (Bachelor Honours Degrees only)

- If the Study requirements and Orders are being amended, provide an explanation of how either: a minimum of 25% of the assessment which contributes to the final honours grade or; 15% of the assessment which contributes to the final Honours mark and formalised monitoring of progress by staff other than each student’s supervisor or Honours convener is completed in the first half (in terms of duration) of Honours study.

41T
Honours research training availability (Bachelor Honours Degrees only)

- If the Study requirements and Orders or the teaching periods in which students may commence study are being amended, and Honours research training courses are to be available to students only once per calendar year, describe the strategies to be used to ensure that students who commence Honours in the Period in which these courses are not taught will not be disadvantaged.

41T

Research component (Masters Degrees only)

- Provide an explanation of and list of courses for how the AQF Level 9 Masters Degree (Coursework) requirement that graduates must be able to “plan and execute a substantial research-based project, capstone experience and/or piece of scholarship” is demonstrated.

41T

Typical full-time pattern of study

**Complete fields in this section only if the current details are being changed.**

Provide typical full-time patterns of study f for each teaching period in which students may commence study.

- Each study pattern should demonstrate completion of the Orders given above in the full-time duration.
- Give the course type, level and unit value in each cell (see Examples below).
- Cells should be merged for courses of 12 or more units.
- Copy and paste rows as needed

Typical Enrolment Pattern (at least one programming course on enrolment) – Specialisation possible but not required

For Students **Commencing Semester 1**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>COMP6710 Structured Programming 6 units</th>
<th>COMP6250 Professional Practice 1 6 units</th>
<th>MATH6005 Discrete Mathematical Models 6 units</th>
<th>Computing Elective 6 units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COMP6442 Software Construction 6 units</td>
<td>COMP8260 Professional Practice 2 6 units</td>
<td>COMP6240 Relational Databases 6 units</td>
<td>SPEC 1 / Computing Elective 6 units</td>
</tr>
<tr>
<td>Year 2</td>
<td>COMP8715 Computing Project 6 units</td>
<td>COMP8110 Managing Software Projects in a System Context 6 units</td>
<td>COMP6331 Computer Networks/ COMP6340 Networked Information Systems 6 units</td>
<td>SPEC 2 / Computing Elective 6 units</td>
</tr>
<tr>
<td></td>
<td>COMP8715 Computing Project 6 units</td>
<td>COMP6120 Software Engineering / SPEC 3 / Computing Elective 6 units</td>
<td>SPEC 4 / Computing Elective 6 units</td>
<td></td>
</tr>
</tbody>
</table>
### Amendment to Academic Award

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>COMP6710</td>
<td>Structured Programming</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP6250</td>
<td>Professional Practice 1</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP6240</td>
<td>Relational Databases</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP6442</td>
<td>Software Construction</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>MATH6005</td>
<td>Mathematics for Computing</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP8110</td>
<td>Managing Software Projects in a System Context</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>SPEC 1 / Computing Elective</td>
<td>6 units</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>COMP8715</td>
<td>Computing Project</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP8260</td>
<td>Professional Practice 2</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP8190</td>
<td>Model Driven Software Development</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP6120</td>
<td>Software Engineering</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP6331</td>
<td>Computer Networks/COMP6340 Networked Information Systems</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>SPEC 3 / Computing Elective</td>
<td>6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPEC 4 / Computing Elective</td>
<td>6 units</td>
<td></td>
</tr>
</tbody>
</table>

### Fees

Current fee places: *Commonwealth Support, Domestic Tuition Fees and International Student Fees*

New fee places if changing:

- For Awards adding International Student Fee places, identify an existing Award with the same indicative international student fee (see the annual fee schedule).

  41T

- Provide details of additional costs, such as compulsory fieldwork expenses (excludes SA Fee).

  41T
### Division of Student Administration use only

- [ ] Consistent with *Australian Qualifications Framework*, including Level 9 research component where relevant  
  If not consistent, give details: 41T

- [ ] Consistent with *National Code 2007*  
  If not consistent, give details: 41T

- [ ] Consistent with policy: *Academic Programs and Courses Accreditation*  
  If not consistent, give details: 41T

- [ ] Consistent with policy: Nomenclature  
  If not consistent, give details: 41T

- [ ] Consistent with policy: Structure and Wording of Coursework Award Requirements, including Registrar approval  
  If not consistent, give details: 41T

- [ ] Consistent with other relevant University policies and standards (e.g. Admission requirements template)  
  If not consistent, give details: 41T

Is this **becoming** the default plan within a single degree program?

- [ ] Australian Higher Education Graduate Statement is appropriate and accurate  
  If not appropriate/accurate, provide new AHEGS below (copy and paste for multiple plans as necessary).

**Detail of Plan - Australian Higher Education Graduation Statement (AHEGS)**

**U**

**Plan Features - Australian Higher Education Graduation Statement (AHEGS)**

**U**

**Plan Pathway - Australian Higher Education Graduation Statement (AHEGS)**

**U**

**Plan Accreditation - Australian Higher Education Graduation Statement (AHEGS)**

**U**

### College Education Committee

Date reviewed by College Education Committee (CEC): 41T

CEC recommendation to UEC:  
- [ ] Endorse with no conditions
Endorse with conditions (specified below)
☐ Do not endorse

As approved by the Dean or delegated authority 41T on 41T

University Education Committee

Date reviewed by University Education Committee (UEC) 41T
Document Number 41T
UEC recommendation to Academic Board
☐ Accredit with no conditions
☐ Accredit with conditions (specified below)
☐ Do not accredit

Academic Board

Date considered by Academic Board 41T
Document Number 41T
Academic Board
☐ Accredits with no conditions from 41T
☐ Accredits with conditions (specified below) from 41T
☐ Does not accredit
Amendment to Academic Award (Coursework)

Doc number 41T

How to use this form

If you intend to change any of the following details, please instead complete a New Academic Award (Coursework) Expression of Interest / Proposal. Fields for these details are marked with ☄ throughout this form. Changes in marked fields will not be approved or processed.

- Award name
- Augmentation name (Masters Degrees only)
- Australian Qualifications Framework qualification level and type
- Full-time duration in years
- Units required for completion

A significant change to mode of delivery (e.g. becoming 100% online or offshore) may require a Award proposal. In such cases, please email policyregs@anu.edu.au to discuss.

Expected turn-around times (after College Education Committee endorsement)

| Amendment requiring no revision or further information | Three months |
| Amendment requiring some revision or further information | Six months |
| Amendment requiring some revision or further information, and further consultation | Nine months |

Please note that turnaround times are for ANU accreditation. Changes to international fee places, mode of delivery or work-based training requirements may affect CRICOS registration and require additional time.

To fill out this Microsoft Word Form, click underlined italicised grey text, e.g. 41T, then make a selection or enter text.

To edit the program title and code in the document header, first double click in the header area. Once edited, the header will be updated on all pages.

Long-answer text fields allow the use of standard formatting features, such as bullet points, and will span pages if necessary.

If you would like to provide feedback on this form, please email policyregs@anu.edu.au. Attachments with comments and/or tracked changes are welcome.

Details

| Award name | Master of Computing (Advanced) ☄ |
| Masters Augmentation (where relevant) | 41T ☄ |
Plan code: VCOMP

Australian Qualifications Framework level and Award type: Level 9 - Masters Degree (Coursework)

External accreditation body (if any): 41T

Full-time duration in years: 2

Units required for completion: 96

Amendment effective from: 1 January 2018

Linked qualifications:
- If this is a pathway or an exit Award, please name the linked Awards. For information on pathways and exit Awards, please see Policy: Academic Programs and Courses Accreditation.

Double degrees:
- Is this plan part of a double degree?
  - Flexible Double Degree (Arts, Social Sciences, Sciences and Business 4 Year)
  - Flexible Double Degree (Arts, Social Sciences, Sciences and Business 5 Year)
  - Flexible Double Degree (Law, Engineering and Advanced Computing 6 Year)
  - Flexible Double Degree (Law)
  - Flexible Double Degree (Engineering and Advanced Computing)
  - Vertical Double Degree
  - Double Masters Degree

Governance:

Responsible College: ANU College of Engineering & Computer Science

Who is the convener of the Award? Dr Lynette Johns-Boast

Does this Award have a dedicated governance committee or advisory board (other than College Education Committee)? If so, detail membership and frequency of meetings.

Have proposed changes been endorsed by the governance committee or advisory board? No - these changes have not been endorsed

Summary:

Provide an executive summary of this proposal for University Education Committee and Academic Board (100 words or fewer).

This program has suffered from low enrolment because it was only available to transfer into after completion of the first 48 units of the Master of Computing (MCOMP). Unless a potential student planned very carefully from their first semester in the MCOMP, frequently they could not meet the requirements to graduate and to fit in the additional 12 units of research.
During a review of the MCOMP and the MCOMP (Advanced) carried out in S2 2016 by RSCS, feedback received from our Industry Advisory Board and students, both domestic and international, indicated that the direct entry for students who had achieved a distinction average or above when completing a 4 year (or international equivalent) Bachelor degree in the computing domain would likely increase enrolments and enable more students to meet their goals.

To maintain the high standard desired of graduates, students who do not maintain a distinction average in their first 48 units of study will be transferred to the MCOMP.

Consultation

Complete fields in this section only where consultation has been undertaken.

Academic consultation

- Includes ANU and external consultation about academic merit and strategic alignment, contribution to teaching, cross-College disciplines, and cross-College pathway degrees
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Division of Student Administration

- Includes degree structures, nomenclature, AQF and legislative compliance, Commonwealth support, CRICOS eligibility
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Division of Student Services

- Includes support for specific cohorts, international students under the age of 18
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Division of International Operations and Student Recruitment

- Includes admissions, student recruitment, international agreements, international experiences, University publications
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with Information Technology Services

- Includes support for specific software and infrastructure needs
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

Consultation with ANU Library
Amendment to Academic Award

- Includes access to specific online and physical collections, specialist information literacy training
- Include evidence of consultation, such as meeting dates, links to published minutes, etc.

41T

Note that insufficient consultation may preclude or delay approval or implementation

Description and requirements

Complete fields in this section only if the current details are being changed.

Marketing and publication description

- This section is published on the ‘Programs and Courses’ website to an external audience and is used primarily for marketing.
- Describe the Award including any key features, its research led elements and any external accreditation of the plan (100 words of fewer).

The Master of Computing (Advanced) is a two year full-time (or equivalent part-time) degree targeting students who wish to enter industry in an R&D or leadership role or who wish to pursue a PhD.

Master of Computing (Advanced) graduates will deepen their existing knowledge and understanding of professional software development and computing practices. Students have the opportunity to participate in many cutting-edge courses and, depending upon their background and interests, are likely to choose to specialise in artificial intelligence, human centred design and software development, or data science. The program culminates in a capstone individual research requiring students to complete a substantial research thesis.

Students may be awarded up to 48 units of credit. The number of units of credit a student receives will be determined on a case by case basis and will be influenced by their background and focus of their earlier studies.

Study requirements and Orders

- Provide requirements for the completion of this Award.
- New courses must be approved before being entered into requirements.
- For Vertical Double Degree undergraduate plans and Double Masters Degrees, provide full requirements for the double degree (i.e. both Awards).
- Orders will be drafted by the Academic Standards and Quality Office for confirmation of the appropriate ANU College Associate Dean to then be made by the Deputy Vice-Chancellor (Academic) (see Undergraduate Awards Rules and Graduate Awards Rules).
- This section is published on the ‘Programs and Courses’ website to an external audience.

The Master of Computer Science (Advanced) requires the completion of 96 units, which must consist of:

36 units from completion of the following compulsory courses:
- COMP6442 Software Construction
- COMP8260 Professional Practice 2
- COMP6445 Computing Research Methods
- COMP6331 Computer Networks
- COMP6420 Introduction to Data Management, Analysis and Security
- COMP6120 Software Engineering

24 units from completion of
COMP8800 Research Project

36 units from completion of additional COMP courses, including at least 24 units of 8000 series course.

Students may choose to use 24 units to complete one of the following specialisations:

- Artificial Intelligence
- Data Science
- Human Centred Design and Software Development

Unless otherwise stated, a course used to satisfy the requirements of one specialisation may not be double counted towards satisfying the requirements of another specialisation.

A minimum of 48 units must come from completion of 8000-level courses.

NOTE: To remain enrolled in the Master of Computing (Advanced) students must achieve a minimum GPA of 6 in the first 48 units and have the approval of a supervisor for the research project.

Students who fail to achieve the required minimum GPA or who do not have the approval of an identified supervisor will be transferred to the Master of Computing.

Learning outcomes

- Learning outcomes are high-level statements of the skills and knowledge which ANU certifies that all graduates of the Award possess.
- For Vertical Double Degrees and Double Masters Degrees, provide full learning outcomes for both degrees.
- This section is published on the ‘Programs and Courses’ website to an external audience.

Upon successful completion, students will be able to:

1. Professionally apply systematic computing approaches to address complex, multi-disciplinary real-world computing problems in a variety of domains.
2. Synthesise and proficiently apply advanced, integrated technical knowledge from their specialisation and other elective areas of study and the underpinning sciences and computational methods.
3. Identify and critically evaluate current developments and emerging trends within their specialization and other elective areas of study.
4. Understand the contextual factors that influence professional computing practice, and identify the potential societal, ethical, and environmental impact of computing activities.
5. Communicate effectively with colleagues, other computing professionals and the broader community employing a range of communication media and tools.
6. Engage in independent investigation, critical reflection and lifelong learning to continue to practice at the forefront of the discipline.
7. Work effectively and proactively within cross-cultural, multi-disciplinary teams, demonstrating autonomy, ethical conduct, expert judgement, adaptability and responsibility to achieve computing outcomes at a high standard.
8. Demonstrate through completion of a substantial computing research project an understanding and application of research methodology and scientific writing.

Admission requirements

Undergraduate

- ATAR, QLD Band and International Baccalaureate score.
41T

Honours plans (without specialisations)

- Complete the template below only if the admission requirements are being amended
- Delete text in brackets if not required.
- Delete numbered items if not required. Note: Item 1 is not required if the degree name is specified.
- Choose only one option from a, b or c.
- A maximum of 12 courses may be specified.

An AQF Level 7 Bachelor [of discipline] degree or equivalent, completed within the last two years:

1. in a cognate discipline
2. with a weighted average mark equivalent to an ANU 70 per cent calculated from the 36 units (i.e. 0.75 EFTSL) of courses in cognate disciplines, excluding 1000-level courses (i.e. introductory undergraduate courses), with the highest marks.
3. with at least:
   a. _____ courses in the subject area _____ [with at least _____ 3000-level courses or equivalent].
   b. a [major][minor][specialisation] or equivalent in _____.
   c. with the following courses or equivalent:
4. with the written approval of an identified supervisor for the research project

with the written approval of an identified supervisor for the thesis

Honours plans (with specialisations)

- Complete the template below only if the admission requirements are being amended
- Delete text in brackets if not required.
- Delete Item 1 if the degree name is specified.

An AQF Level 7 Bachelor [of discipline] degree or equivalent, completed within the last two years:

1. in a cognate discipline
2. with a weighted average mark equivalent to an ANU 70 per cent calculated from the 36 units (i.e. 0.75 EFTSL) of courses in the discipline cognate to the honours specialisation, excluding 1000-level courses (i.e. introductory undergraduate courses), with the highest marks.
3. and the satisfaction of any further requirements specified in the relevant honours specialisation.

Direct-entry Graduate Coursework

- Complete the template below only if the admission requirements are being amended
- Final admission requirements will be drafted by the Academic Standards and Quality Office for confirmation of the appropriate ANU College Associate Dean.
- This section is published on the ‘Programs and Courses’ website to an external audience.

A Bachelor degree or international equivalent

- with a GPA of 6 or higher or
- with at least 3 years’ work experience in a relevant domain and a Bachelor degree in a cognate area with a GPA less than 6 but greater than GPA 5 may be admitted on a case by case basis.
Cognate disciplines (Honours and Graduate coursework only)

- List each discipline considered to be ‘cognate’ for the purposes of admission and credit on a new line.
- This section is published on the ‘Programs and Courses’ website to an external audience.

<table>
<thead>
<tr>
<th>Computer Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Engineering</td>
</tr>
</tbody>
</table>

Prospective students with other computing degrees, such as Information Technology or Science (with a major in computing), will be considered on a case by case basis.

Delivery

Current delivery mode(s): **In person - 75% or more on campus, maximum 25% of courses online**

New delivery mode(s) if changing:

- [ ] Will now include compulsory work-based training of 41T hours per week for 41T weeks.
- [ ] No longer includes compulsory work-based training
- [ ] Will now be off campus – this Award is now to be administered and completed externally to the Acton campus.
- [ ] No longer off campus – this Award is now to be administered and completed at the Acton campus.
- [ ] Will now be Intensive – this Award is now to be completed by undertaking accelerated courses, i.e. courses that are undertaken in a full-time block rather than across a semester.
  - Intensive duration in weeks (from commencement to submission of final assessment): **41T**
- [ ] No longer intensive – this Award is no longer to be completed by undertaking accelerated courses, i.e. courses that are undertaken in a full-time block rather than across a semester.
- [ ] Will now be registered on CRICOS (subject to assessment by TEQSA).
- [ ] No longer to be registered on CRICOS.

List all teaching periods in which students may commence study.

- i.e. Summer, First Semester, Autumn, Winter, Second Semester and/or Spring
- Note that international student visa holders must be able to complete within the normal duration of study without the need to ‘underload’ or take leave.

41T

[ ] International student visa holders are able to complete within the normal duration of study without the need to ‘underload’ or take leave when commencing in all listed teaching periods.

ANU Graduate Coursework model (Graduate Coursework only)

[ ] This Award is consistent with the University’s Graduate Coursework Model
[ ] This Award requires approval as an exception to the ANU Graduate Coursework model.

- For low-enrolment Graduate Certificates and Graduate Diplomas, provide a strategic case for retention of this Award and attach all available evidence.
• For Masters Degrees requiring more or less than 96 units, or with admission requirements other than a non-cognate Bachelor Degree, provide significant justification for creation of this Award (e.g. professional accreditation or international standards) and attach all available evidence.

41T

Assessment alignment (Bachelor Honours Degrees only)

• If the learning outcomes are being amended, provide an explanation of how the structure of assessment determines whether the Honours learning outcomes have been met.

41T

Timing of Honours assessment (Bachelor Honours Degrees only)

• If the Study requirements and Orders are being amended, provide an explanation of how either: a minimum of 25% of the assessment which contributes to the final honours grade or; 15% of the assessment which contributes to the final Honours mark and formalised monitoring of progress by staff other than each student's supervisor or Honours convener is completed in the first half (in terms of duration) of Honours study.

41T

Honours research training availability (Bachelor Honours Degrees only)

• If the Study requirements and Orders or the teaching periods in which students may commence study are being amended, and Honours research training courses are to be available to students only once per calendar year, describe the strategies to be used to ensure that students who commence Honours in the Period in which these courses are not taught will not be disadvantaged.

41T

Research component (Masters Degrees only)

• Provide an explanation of and list of courses for how the AQF Level 9 Masters Degree (Coursework) requirement that graduates must be able to “plan and execute a substantial research-based project, capstone experience and/or piece of scholarship” is demonstrated.

Students are required to complete COMP6445 Computing Research Methods, which introduces them to the fundamentals of research methodologies suitable for application in the computing domain. Additionally, they are required to complete a minimum of four 8000 series advanced courses which will likely be from a single domain of computing allowing them to develop a deep knowledge and understanding of their chosen domain. As a capstone experience students are required to complete 24 units of research in the form of COMP8800 Research project.

Typical full-time pattern of study

Complete fields in this section only if the current details are being changed.

Provide typical full-time patterns of study for each teaching period in which students may commence study.

• Each study pattern should demonstrate completion of the Orders given above in the full-time duration.
- Give the course type, level and unit value in each cell (see Examples below).
- Cells should be merged for courses of 12 or more units.
- Copy and paste rows as needed

Examples:

For Students **Commencing Semester 1**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>COMP6442 Software Construction</th>
<th>COMP6445 Computing Research Methods</th>
<th>COMP6420 Introduction to Data Management, Analysis and Security</th>
<th>COMP6331 Computer Networks</th>
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<tbody>
<tr>
<td></td>
<td>6 units</td>
<td>6 units</td>
<td>6 units</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP8260 Professional Practice 2</td>
<td>6 units</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMP8800 Computing Research Project</td>
<td>12 units</td>
<td>Computing Elective 6 units</td>
<td>SPEC 1 / Computing Elective 6 units</td>
</tr>
<tr>
<td>Year 2</td>
<td>COMP8800 Computing Research Project</td>
<td>12 units</td>
<td>SPEC 3 / Computing Elective 6 units</td>
<td>SPEC 4 / Computing Elective 6 units</td>
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</table>

For Students **Commencing Semester 2**

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<thead>
<tr>
<th>Year 1</th>
<th>COMP6442 Software Construction</th>
<th>COMP6120 Software Engineering</th>
<th>COMP8260 Professional Practice 2</th>
<th>Computing Elective</th>
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<td></td>
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<td>6 units</td>
<td>6 units</td>
<td>6 units</td>
</tr>
<tr>
<td></td>
<td>COMP6445 Computing Research Methods</td>
<td>6 units</td>
<td>COMP6420 Introduction to Data Management, Analysis and Security</td>
<td>SPEC 1 / Computing Elective 6 units</td>
</tr>
<tr>
<td>Year 2</td>
<td>COMP8800 Computing Research Project</td>
<td>12 units</td>
<td>Computing Elective 6 units</td>
<td>SPEC 2 / Computing Elective 6 units</td>
</tr>
<tr>
<td></td>
<td>COMP8800 Computing Research Project</td>
<td>12 units</td>
<td>SPEC 3 / Computing Elective 6 units</td>
<td>SPEC 4 / Computing Elective 6 units</td>
</tr>
</tbody>
</table>

**Fees**

Current fee places: Commonwealth Support, Domestic Tuition Fees and International Student Fees

New fee places if changing:
For Awards adding International Student Fee places, identify an existing Award with the same indicative international student fee (see the annual fee schedule).

Provide details of additional costs, such as compulsory fieldwork expenses (excludes SA Fee).

### Division of Student Administration use only

- Consistent with *Australian Qualifications Framework*, including Level 9 research component where relevant
  - If not consistent, give details:
    - 41T

- Consistent with *National Code 2007*
  - If not consistent, give details:
    - 41T

- Consistent with policy: *Academic Programs and Courses Accreditation*
  - If not consistent, give details:
    - 41T

- Consistent with policy: Nomenclature
  - If not consistent, give details:
    - 41T

- Consistent with policy: Structure and Wording of Coursework Award Requirements, including Registrar approval
  - If not consistent, give details:
    - 41T

- Consistent with other relevant University policies and standards (e.g. Admission requirements template)
  - If not consistent, give details:
    - 41T

Is this becoming the default plan within a single degree program?

- Australian Higher Education Graduate Statement is appropriate and accurate
  - If not appropriate/accurate, provide new AHEGS below (copy and paste for multiple plans as necessary).

**Detail of Plan - Australian Higher Education Graduation Statement (AHEGS)**

**Plan Features - Australian Higher Education Graduation Statement (AHEGS)**

**Plan Pathway - Australian Higher Education Graduation Statement (AHEGS)**
Plan Accreditation - Australian Higher Education Graduation Statement (AHEGS)

U

College Education Committee

Date reviewed by College Education Committee (CEC) 41T
CEC recommendation to UEC
   ○ Endorse with no conditions
   ○ Endorse with conditions (specified below)
   ○ Do not endorse

41T

As approved by the Dean or delegated authority 41T on 41T

University Education Committee

Date reviewed by University Education Committee (UEC) 41T
Document Number 41T
UEC recommendation to Academic Board
   ○ Accredit with no conditions
   ○ Accredit with conditions (specified below)
   ○ Do not accredit

41T

Academic Board

Date considered by Academic Board 41T
Document Number 41T
Academic Board
   ○ Accredits with no conditions from 41T
   ○ Accredits with conditions (specified below) from 41T
   ○ Does not accredit

41T
New Major/Minor/Specialisation

Name: Data Science
Type: Specialisation (graduate) - 24 units
Responsible College: ANU College of Engineering & Computer Science

Marketing and publication description (Maximum 120 words)

Data Science combines the fields of computer science, statistics and applied mathematics, and visualisation and, using automated analysis methods, extracts information and insights from massive quantities of both structured and unstructured data. The specialisation includes courses in areas such as database systems, data mining, document analysis, artificial intelligence and machine learning.

Learning outcomes

Upon successful completion, students will have the knowledge and skills to:

1. Understand and apply the principles and theories used to develop methods of collecting, analysing and interpreting structured and unstructured data
2. Apply a range of data modelling, analytics and visualisation techniques to extract knowledge and insights from large and complex structured and unstructured data
3. Understand system infrastructures that support the acquisition, storage and retrieval of data.

Requirements

- Requirements must not include hurdle/progression requirements.
- Please consider listing as compulsory courses sufficient prerequisites/co-requisites of compulsory courses so that majors, minors and specialisations may be completed within the 24/48 units specified. Where a major, minor or specialisation is exclusive to a particular degree, prerequisites/co-requisites that sit outside the major, minor, or specialisation should be available to students in that degree.
- Graduate specialisations must not refer to subject areas (e.g. LAWS Law) or hurdle/progression requirements.

The specialisation requires completion of 24 units, which must consist of

0 to 12 units from completion of the following courses

- COMP8430 Data Wrangling
- COMP6320 Artificial Intelligence
- COMP6490 Document Analysis

And 12 to 24 units from completion of the following courses

- COMP8410 Data Mining
- COMP8420 Bio Inspired Computing: Applications and Interfaces
- COMP8600 Introduction to Statistical Machine Learning
- COMP8620 Advanced Topics in Artificial Intelligence
- COMP8650 Advanced Topics in Statistical Machine Learning

Co-requisite major(s) (specialisation only)

- Undergraduate specialisations require at least one co-requisite major.

Exclusivity
If this major, minor or specialisation is restricted to particular Awards (i.e. may not be completed with electives in all undergraduate Awards), list them below. Copy/paste additional rows as required.

<table>
<thead>
<tr>
<th>Academic plan</th>
<th>Award name</th>
</tr>
</thead>
<tbody>
<tr>
<td>7706XMCOMP</td>
<td>Master of Computing</td>
</tr>
<tr>
<td>VCOMP</td>
<td>Master of Computing (Advanced)</td>
</tr>
<tr>
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</tr>
<tr>
<td>41T</td>
<td>41T</td>
</tr>
</tbody>
</table>

Endorsement, approval and accreditation

**College**
by 41T on 41T

**University Education Committee**
on 41T

**Academic Board**
on 41T

**Academic Standards and Quality Office use only**

Subplan code: 41T
New Major/Minor/Specialisation

Name: Human Centred Design and Software Development
Type: Specialisation (graduate) - 24 units
Responsible College: ANU College of Engineering & Computer Science

Marketing and publication description (Maximum 120 words)

The goal of human centred software development is to produce software products that are designed and developed around the users’ needs and requirements from the very beginning of the development process. “Human-centered design is a creative approach to interactive systems development that aims to make systems usable and useful by focusing on the users, designing around their needs and requirements at all stages, and by applying human factors/ergonomics, usability knowledge, and techniques. This approach enhances effectiveness and efficiency, improves human well-being, user satisfaction, accessibility and sustainability; and counteracts possible adverse effects of use on human health, safety and performance.” [ISO 9241-210:2010(E)]. This specialisation includes courses in the human-computer interface design, software engineering processes and interdisciplinary courses on complex systems.

Learning outcomes

Upon successful completion, students will have the knowledge and skills to:

1. Demonstrate a broad knowledge of contemporary issues and challenges in human-centred software development.
2. Apply appropriate approaches and technologies to develop complex software that meets user needs and requirements.
3. Demonstrate skills in dealing with uncertainty and complexity in software development

Requirements

- Requirements must not include hurdle/progression requirements.
- Please consider listing as compulsory courses sufficient prerequisites/co-requisites of compulsory courses so that majors, minors and specialisations may be completed within the 24/48 units specified. Where a major, minor or specialisation is exclusive to a particular degree, prerequisites/co-requisites that sit outside the major, minor, or specialisation should be available to students in that degree.
- Graduate specialisations must not refer to subject areas (e.g. LAWS Law) or hurdle/progression requirements.

The specialisation requires completion of 24 units, which must consist of

0 to 12 units from completion of the following courses

- COMP6353 Systems Engineering for Software Engineers
- COMP6390 HCI and Usability Engineering
- COMP6461 Computer Graphics

And 12 to 24 units from completion of the following courses

- COMP8100 Requirements Elicitation & Analysis Techniques
- COMP8173 Software Engineering Processes
- COMP8190 Model-Driven Software Development
- COMP8420 Bio-Inspired Computing Applications & Interfaces
- VCPG6001 Unravelling Complexity
- VCPG6004 Creativity
- VCPG8001 Wicked Problems
Co-requisite major(s) (specialisation only)

- Undergraduate specialisations require at least one co-requisite major.

Exclusivity

- If this major, minor or specialisation is restricted to particular Awards (i.e. may not be completed with electives in all undergraduate Awards), list them below. Copy/paste additional rows as required.

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</table>

Endorsement, approval and accreditation

College

by 41T on 41T

University Education Committee

on 41T

Academic Board

on 41T

Academic Standards and Quality Office use only

Subplan code: 41T
New Major/Minor/Specialisation

Name: Cyber Security
Type: Major - 48 units
Responsible College: ANU College of Engineering & Computer Science

Marketing and publication description (Maximum 120 words)

The cyber security major provides principles, theories and practical skills required to analyse and manage current cyber security situations. Students will learn how to reverse-engineer a given system and to identify and test vulnerabilities. The addressed systems cover the complete range of architectures from individual controllers to the internet.

Learning outcomes

Upon successful completion, students will have the knowledge and skills to:

1. Understand the principles, practice and issues associated with the field of cyber security
2. Apply a range of modelling, management, analytics and visualisation techniques to handle relevant defensive as well as offensive cyber security operations
3. Reverse-engineer systems based on minimal outside information
4. Communicate and present their knowledge of cyber security to diverse audiences

Requirements

- Requirements must not include hurdle/progression requirements.
- Please consider listing as compulsory courses sufficient prerequisites/co-requisites of compulsory courses so that majors, minors and specialisations may be completed within the 24/48 units specified. Where a major, minor or specialisation is exclusive to a particular degree, prerequisites/co-requisites that sit outside the major, minor, or specialisation should be available to students in that degree.
- Graduate specialisations must not refer to subject areas (e.g. LAWS Law) or hurdle/progression requirements.

Completion of 48 units of courses as follows:

36 units from completion of the following courses:
- COMP2700 Cyber Security Foundations
- COMP3300 Operating Systems
- COMP3310 Computer Networks
- COMP3701 Defensive Cyber Security Operations
- COMP3702 Offensive Cyber Security Operations
- CRIM2010 Cybercrime: an introduction

12 units from completion of courses from the following:
- COMP2310 Systems Networks and Concurrency
- COMP2610 Information Theory
New Major/Minor/Specialisation

- COMP4330 Real-Time & Embedded Systems
- ENGN3213 Digital Systems and Microprocessors
- MATH3301 Number Theory and Cryptography

Co-requisite major(s) (specialisation only)
- Undergraduate specialisations require at least one co-requisite major.

Exclusivity
- If this major, minor or specialisation is restricted to particular Awards (i.e. may not be completed with electives in all undergraduate Awards), list them below. Copy/paste additional rows as required.

<table>
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<tr>
<th>Academic plan</th>
<th>Award name</th>
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<td>Enter Award name</td>
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<tr>
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<td>Enter Award name</td>
</tr>
</tbody>
</table>

Endorsement, approval and accreditation

College
Select endorsement by Enter endorsement authority name on Select date

University Education Committee
Select endorsement on Select date

Academic Board
Select approval on Select date

Academic Standards and Quality Office use only

Subplan code: Enter code
Amend Major/Minor/Specialisation

Name: Artificial Intelligence
Type: Specialisation (graduate) - 24 units
Responsible College: ANU College of Engineering & Computer Science

Marketing and publication description (Maximum 120 words)

The Artificial Intelligence specialization offers courses on a wide range of relevant topics. Depending on the chosen courses, students will learn about AI search, optimisation, reasoning, planning, diagnosis, machine learning, intelligent agents (reinforcement learning, information-theoretic foundations), data-driven approaches (matching and modelling), and bio-inspired computing (neural networks, and evolutionary algorithms).

Learning outcomes

Upon successful completion, students will have the knowledge and skills to:

1. Demonstrate a solid understanding of a variety of Intelligence System (IS) approaches,
2. Formalise real-world problems and select the most appropriate AI method to solve such a problem.
3. Implement IS algorithms and design and carry out empirical evaluations.

Requirements

- Requirements must not include hurdle/progression requirements.
- Please consider listing as compulsory courses sufficient prerequisites/co-requisites of compulsory courses so that majors, minors and specialisations may be completed within the 24/48 units specified. Where a major, minor or specialisation is exclusive to a particular degree, prerequisites/co-requisites that sit outside the major, minor, or specialisation should be available to students in that degree.
- Graduate specialisations must not refer to subject areas (e.g. LAWS Law) or hurdle/progression requirements.

This specialisation requires completion of 24 units, which must consist of

0 to 12 units from completion of the following courses

COMP6260 Foundations of Computing
COMP6262 Logic
COMP6320 Artificial Intelligence

And 12 to 24 units from completion of the following courses

COMP8420 Bio-Inspired Computing: Applications and Interfaces
COMP8600 Introduction to Statistical Machine Learning
COMP8620 Advanced Topics in Artificial Intelligence
COMP8650 Advanced Topics in Statistical Machine Learning
COMP8670 Advanced Topics in Logic & Computation
ENGN6528 Computer Vision

Co-requisite major(s) (specialisation only)

- Undergraduate specialisations require at least one co-requisite major.
Exclusivity

- If this major, minor or specialisation is restricted to particular Awards (i.e. may not be completed with electives in all undergraduate Awards), list them below. Copy/paste additional rows as required.

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<td>41T</td>
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</tr>
</tbody>
</table>

Endorsement, approval and accreditation

College

by 41T on 41T

University Education Committee

on 41T

Academic Board

on 41T

Academic Standards and Quality Office use only

- Subplan code: 41T
New course to be created as a result of the MCOMP review.

Real-world software development is a dynamically complex activity involving uncertainty, people, technology and processes interacting within a similarly complex environment of clients, users and other stakeholders as well as evolving technological, physical, social, legal, ethical and other constraints.

This course will empower students with the ability and confidence necessary to exercise critical thinking and professional judgment to select and apply appropriate knowledge, practices and tools to the development of non-trivial software systems within such complex environments. This will be achieved by first introducing students to key ideas and tools for dealing with complexity and uncertainty including Design Thinking. We will then build on previous programming and architecture courses to deepen and broaden student knowledge and understanding of the practices and tools used to build software systems within complex environments. We will use examples of real-time, distributed, web-based, high-integrity, games and other types of projects from local industry, published case studies and past software engineering student projects, to develop an understanding of when and why particular practices and tools are appropriate and when they are not.

Students will also learn how practices and tools can be adapted to suit specific project needs and contexts. Knowledge, practices and tools considered in this course will cover process models, requirements engineering, design, modelling, construction, verification and validation, human-computer interaction, professional ethics, teamwork and social context.
### Learning Outcomes

Upon completion of this course, the student will be able to:

1. Demonstrate an ability to use knowledge, tools and practices relating to the following aspects of software engineering:
   a. Requirements
   b. Design
   c. Construction
   d. Verification & Validation
   e. Evolution
   f. Reliability
   g. Human Computer Interaction
2. Demonstrate familiarity with Complexity and Uncertainty
3. Demonstrate familiarity with approaches for dealing with complexity and uncertainty, including Systems Thinking and Design Thinking
4. Demonstrate an understanding that software development is a complex activity conducted within a complex socio-technical environment
5. Demonstrate the ability to use professional judgment to select and apply appropriate knowledge, practices and tools to the development of non-trivial software systems within complex and uncertain environments taking into account social, ethical and sustainability concerns.
6. Demonstrate how practices and tools can be adapted to suit specific project needs and contexts.

### Workload

Up to 36 one-hour lectures and ten two-hour labs.

### Prescribed Texts (Reading to Support the Course)

### Preliminary Reading

### Indicative Reading List

### Assumed Knowledge, Required Skills and Recommended Courses (not prerequisites)

### Requisite Statement for Course (includes Corequisite/Prerequisite and Incompatibility)

To enrol in this course you must have successfully completed or be currently studying COMP2100. Incompatible with COMP2120.

### Indicative Assessment

2 group assignments (40%); mid-semester exam (30%); final exam (30%)

### Assessment Rationale

### Additional Assessment | Learning Outcomes

### Mode of Delivery

In person

### Quality Assurance Arrangements

### Transitional Arrangements (if applicable)

### Relevant ANU internal and external consultation

### Intended Market and work undertaken to evaluate the market

### Estimated Enrolment Numbers and rationale

---

RSCS Curriculum Development Committee Agenda 1702
## COURSE FEES

<table>
<thead>
<tr>
<th>Field of Education Code</th>
<th>Department ID</th>
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<th>Per Unit DTF</th>
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Fee rate is same as existing course

Submit by Email to Course Registry
### Academic Course Form

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<tr>
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<th>Subject Area</th>
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<th>Short Course Title</th>
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<td>Intro to Data and Security</td>
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<th>ACADEMIC USE</th>
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<tr>
<th>To Take Effect From</th>
<th>Course Minimum Unit Value</th>
<th>Course Maximum Unit Value</th>
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<td>6</td>
<td>6</td>
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<thead>
<tr>
<th>Does this course have an UG / PG Equivalent ?</th>
<th>UG / PG Equivalent</th>
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<tr>
<th>Do you want this course to be offered as a variable unit course?</th>
<th>Proposed Date</th>
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<tr>
<th>Proposer Name</th>
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</thead>
<tbody>
<tr>
<td>Lynette Johns-Boast</td>
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<tr>
<th>Primary Convenor's Email</th>
<th>Primary Convenor's Name</th>
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<table>
<thead>
<tr>
<th>Course Description</th>
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<tbody>
<tr>
<td>Commerce and research are being transformed by data-driven discovery and prediction. Skills required for data analytics at massive levels - scalable data management on and off the cloud, parallel algorithms, statistical modeling, and proficiency with a complex ecosystem of tools and platforms - span a variety of disciplines and are not easy to obtain through conventional curricula. Tour the basic techniques of data science, including both SQL and NoSQL solutions for massive data management, basic statistical modeling (e.g., descriptive statistics, linear and non-linear regression), algorithms for machine learning and optimization, and fundamentals of knowledge representation and search. Learn key concepts in security and the use of cryptographic techniques in securing data.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstrate a conceptual understanding of database systems and architecture, data models and declarative query languages</td>
</tr>
<tr>
<td>2. Define, query and manipulate a relational database</td>
</tr>
<tr>
<td>3. Demonstrate basic knowledge and understanding of descriptive and predictive data analysis methods, optimization and search, and knowledge representation</td>
</tr>
<tr>
<td>4. Formulate and extract descriptive and predictive statistics from data</td>
</tr>
<tr>
<td>5. Analyse and interpret results from descriptive and predictive data analysis</td>
</tr>
<tr>
<td>6. Apply their knowledge to a given problem domain and articulate potential data analysis problems</td>
</tr>
<tr>
<td>7. Identify potential pitfalls, and social and ethical implications of data science</td>
</tr>
</tbody>
</table>
8. Explain key security concepts and the use of cryptographic techniques, digital signatures and PKI in security.

Workload
Up to 36 one-hour lectures and eight two-hour labs.

Prescribed Texts (Reading to Support the Course)

Preliminary Reading

Indicative Reading List

Assumed Knowledge, Required Skills and Recommended Courses (not prerequisites)

Requisite Statement for Course (includes Corequisite/Prerequisite and Incompatibility)
To enrol in this course, you must have completed COMP1100 or COMP1130. Incompatible with COMP2420.

Indicative Assessment
Assignments (50%); Final Exam (50%)

Assessment Rationale

Additional Assessment | Learning Outcomes

Mode of Delivery
In person

Quality Assurance Arrangements

Transitional Arrangements (if applicable)

Relevant ANU internal and external consultation

Intended Market and work undertaken to evaluate the market

Estimated Enrolment Numbers and rationale

Areas of Interest
Please select Areas of Interest

Is this required on a Sub-Plan?
Please specify Major / Minor / Spec

ADMINISTRATION USE

Responsible College
ANU College of Engineering and Computer Science

Send Notifications To
Melissa.Coppin@anu.edu.au

Associate Dean / Dean/ College Dean
Associate Professor Jochen Trumpf
Is Consent Required to Enrol?  No

If yes, reason

Eligibility for Graduate Studies (Graduate Coursework Only)  No

Graduate Studies Classification 1

Graduate Studies Classification 2

List of course topics (Topics are descriptors on course names) (30 character limit each topic)

Academic Organisation (Offered by)  07345 – Research School of Computer Science

Academic Group  ENGIT (ANU College of Eng & Comp Sci)

Academic Career  PGRD (Postgraduate)

How many times may this course be repeated after successful completion?  0

(Please enter number only)

Course Grading Basis  GRD (Graded)

Course Component  CRS (Course Enrolment Only)

Is this a work experience or course internship?  No

If yes, to a work experience course, will the learning and assessment be directed by the ANU?

Quota

Proposed Scheduling (for the next three years)

Does this course have more than one owner?  No

<table>
<thead>
<tr>
<th>Split Ownership</th>
<th>Academic Organisation</th>
<th>Percentage EFTSL</th>
</tr>
</thead>
<tbody>
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COURSE FEES

Field of Education Code

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Fee rate is same as existing course

Department ID  CE200

Submit by Email to Course Registry
New course to be created as a result of the MCOMP review.

Advanced Computing Research Methods

Adv Comp Rsch Mthds

1. Effectively communicate research questions, methods and outcomes in oral, written and graphical forms to a broad audience using appropriate tools.
2. Develop and apply an active approach to learning and undertake reflective professional practice.
3. Justify and apply appropriate technological choices based on a consideration of the research question and methods.
4. Undertake and manage a research project of significant size and scope and understand the role of collaboration in large research projects.
5. Explain the process of identifying and formulating research questions.
6. Apply effective literature search and critical evaluation skills.
7. Design and conduct experiments, devise appropriate metrics, analyse and interpret data and form reliable conclusions.
8. Document all aspects of the development and delivery of a significant research project.
9. Explain the role of academic integrity and the importance of building upon and correctly attributing the work of others.

**Workload**

A research project with a time commitment of approximately 90 hours, and two assignments with a time commitment of approximately 20 hours each. The projects take into account the student’s background and the stage of their degree. Students are encouraged to meet with their supervisor on a regular basis (at least once a week).

**Prescribed Texts (Reading to Support the Course)**

- **Preliminary Reading**
- **Indicative Reading List**

**Assumed Knowledge, Required Skills and Recommended Courses (not prerequisites)**

**Requisite Statement for Course** (includes Corequisite/Prerequisite and Incompatibility)

You will need to contact the Research School of Computer Science to request a permission code to enrol in this course. Incompatible with COMP4450.

**Indicative Assessment**

Two assignments, worth 15% each. The project assessment is worth 70% and consists of the project report (65%), a seminar (15%) and other assessment items jointly agreed on by the student and supervisor prior to project commencement (20%).

**Assessment Rationale**

- Additional Assessment | Learning Outcomes

**Mode of Delivery**

**Quality Assurance Arrangements**

**Transitional Arrangements (if applicable)**

**Relevant ANU internal and external consultation**

**Intended Market and work undertaken to evaluate the market**

**Estimated Enrolment Numbers and rationale**

**Areas of Interest Please select Areas of Interest**

**Is this required on a Sub-Plan?**

Please specify Major / Minor / Spec

**ADMINISTRATION USE**

**Responsible College**

ANU College of Engineering and Computer Science
Send Notifications To: Melissa.Coppin@anu.edu.au

Associate Dean / Dean/ College Dean: Associate Professor Jochen Trumpf

Is Consent Required to Enrol? No

If yes, reason:

Eligibility for Graduate Studies (Graduate Coursework Only): No

Graduate Studies Classification 1

Graduate Studies Classification 2

List of course topics (Topics are descriptors on course names) (30 character limit each topic):

Academic Organisation (Offered by): 07345 – Research School of Computer Science

Academic Group: ENGIT (ANU College of Eng & Comp Sci)

Academic Career: PGRD (Postgraduate)

How many times may this course be repeated after successful completion? 0

Course Grading Basis: GRD (Graded)

Course Component: CRS (Course Enrolment Only)

Is this a work experience or course internship? No

If yes, to a work experience course, will the learning and assessment be directed by the ANU?

Quota

Proposed Scheduling (for the next three years):

Does this course have more than one owner? No

Split Ownership

Academic Organisation

Percentage EFTSL

COURSE FEES

Field of Education Code

<table>
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<th>Year</th>
<th>Per Unit ISF</th>
<th>Per Unit DTF</th>
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</table>

Fee rate is same as existing course

Department ID: CE200
Academic Course Form

CEC Document Number

Subject Area: COMP  Catalogue Number: 1040

Date Approved

Course Status: Not Approved

Request Type: Course Amendment

Amendment Type: Minor Amendment - Change of Pre-requisite

Amendment Description: Add incompatible courses to requisite statement

Rationale

Long Course Title: The Craft of Computing (100 characters)

Short Course Title: The Craft of Computing (30 characters)

To Take Effect From: 01/01/2018

Course Minimum Unit Value: 6  
Course Maximum Unit Value: 6

Does this course have an UG / PG Equivalent? No

Do you want this course to be offered as a variable unit course? No  
Proposed Date

Proposer Name

Primary Convener's Email

Primary Convener's Name

Course Description

Course Structure and Content

Learning Outcomes

Workload

Prescribed Texts (Reading to Support the Course)

Preliminary Reading

Indicative Reading List

Assumed Knowledge, Required Skills and Recommended Courses (not prerequisites)

RSCS Curriculum Development Committee Agenda 1702  Page 59
**Requisite Statement for Course** (includes Corequisite/Prerequisite and Incompatibility)  
(For more information please refer Requisite Design Guide)

Incompatible with COMP1730, COMP6730 and COMP7230.

<table>
<thead>
<tr>
<th>Indicative Assessment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Rationale</td>
<td></td>
</tr>
<tr>
<td>Additional Assessment</td>
<td></td>
</tr>
<tr>
<td>Learning Outcomes</td>
<td></td>
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<tr>
<td>Mode of Delivery</td>
<td></td>
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<tr>
<td>Quality Assurance Arrangements</td>
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<tr>
<td>Transitional Arrangements (if applicable)</td>
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<tr>
<td>Relevant ANU internal and external consultation</td>
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<tr>
<td>Intended Market and work undertaken to evaluate the market</td>
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<tr>
<td>Estimated Enrolment Numbers and rationale</td>
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</tr>
<tr>
<td>Areas of Interest</td>
<td>Please select Areas of Interest</td>
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<tr>
<td>Is this required on a Sub-Plan?</td>
<td>Please specify Major / Minor / Spec</td>
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**ADMINISTRATION USE**

<table>
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<tr>
<th>Responsible College</th>
<th>ANU College of Engineering and Computer Science</th>
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<tbody>
<tr>
<td>Send Notifications To</td>
<td><a href="mailto:Melissa.Coppin@anu.edu.au">Melissa.Coppin@anu.edu.au</a></td>
</tr>
<tr>
<td>Associate Dean / Dean/ College Dean</td>
<td>Associate Professor Jochen Trumpf</td>
</tr>
<tr>
<td>Is Consent Required to Enrol?</td>
<td>No</td>
</tr>
<tr>
<td>If yes, reason</td>
<td></td>
</tr>
<tr>
<td>Eligibility for Graduate Studies (Graduate Coursework Only)</td>
<td>No</td>
</tr>
<tr>
<td>Graduate Studies Classification 1</td>
<td></td>
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<tr>
<td>Graduate Studies Classification 2</td>
<td></td>
</tr>
<tr>
<td>List of course topics (Topics are descriptors on course names) (30 character limit each topic)</td>
<td></td>
</tr>
<tr>
<td>Academic Organisation (Offered by)</td>
<td>07345 – Research School of Computer Science</td>
</tr>
</tbody>
</table>
Academic Group: ENGIT (ANU College of Eng & Comp Sci)

How many times may this course be repeated after successful completion? (Please enter number only)

0

Course Grading Basis:

Is this a work experience or course internship?

No

If yes, to a work experience course, will the learning and assessment be directed by the ANU?

Quota:

Proposed Scheduling (for the next three years):

Does this course have more than one owner?

No

<table>
<thead>
<tr>
<th>Split Ownership</th>
<th>Academic Organisation</th>
<th>Percentage EFTSL</th>
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</table>

COURSE FEES

Field of Education Code:

Year | Per Unit ISF | Per Unit DTF
-----|--------------|--------------|
      |              |              |
      |              |              |
      |              |              |

Fee rate is same as existing course

Department ID: CE200

Submit by Email to Course Registry
**Academic Course Form**

<table>
<thead>
<tr>
<th>Request Type</th>
<th>Course Amendment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amendment Type</td>
<td>Minor Amendment - Change of Pre-requisite</td>
</tr>
<tr>
<td>Amendment Description</td>
<td>Update requisite statement with incompatible courses.</td>
</tr>
<tr>
<td>Rationale</td>
<td></td>
</tr>
<tr>
<td>Long Course Title</td>
<td>Relational Databases</td>
</tr>
<tr>
<td>Short Course Title</td>
<td>Relational Databases</td>
</tr>
<tr>
<td>To Take Effect From</td>
<td>01/01/2018</td>
</tr>
<tr>
<td>Course Minimum Unit Value</td>
<td>6</td>
</tr>
<tr>
<td>Course Maximum Unit Value</td>
<td>6</td>
</tr>
<tr>
<td>Does this course have an UG / PG Equivalent?</td>
<td>Yes</td>
</tr>
<tr>
<td>UG / PG Equivalent</td>
<td>COMP6240</td>
</tr>
<tr>
<td>Do you want this course to be offered as a variable unit course?</td>
<td>No</td>
</tr>
<tr>
<td>Proposed Date</td>
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<tr>
<td>Primary Convenor's Email</td>
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<tr>
<td>Primary Convenor's Name</td>
<td></td>
</tr>
<tr>
<td>Course Description</td>
<td></td>
</tr>
<tr>
<td>Course Structure and Content</td>
<td></td>
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<tr>
<td>Learning Outcomes</td>
<td></td>
</tr>
<tr>
<td>Workload</td>
<td></td>
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<tr>
<td>Prescribed Texts (Reading to Support the Course)</td>
<td></td>
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<tr>
<td>Preliminary Reading</td>
<td></td>
</tr>
<tr>
<td>Indicative Reading List</td>
<td></td>
</tr>
<tr>
<td>Assumed Knowledge, Required Skills and Recommended Courses (not prerequisites)</td>
<td></td>
</tr>
</tbody>
</table>
You are not able to enrol in this course if you have successfully completed COMP6240. Incompatible with COMP7240.
Academic Group: ENGIT (ANU College of Eng & Comp Sci)

Academic Career:

How many times may this course be repeated after successful completion?
(Please enter number only)

0

Course Grading Basis:

Course Component:

Is this a work experience or course internship?
No

(Work Experience course are where student learning and performance is not directed by the university)

If yes, to a work experience course, will the learning and assessment be directed by the ANU?

Quota:

Proposed Scheduling (for the next three years):

Does this course have more than one owner?
No

Split Ownership

Academic Organisation

Percentage EFTSL

COURSE FEES

Field of Education Code:

Year

Per Unit ISF

Per Unit DTF

Fee rate is same as existing course:

Department ID: CE200

Submit by Email to Course Registry
Request Type: Course Amendment

Amendment Type: Minor Amendment - Change of Pre-requisite

Amendment Description: Update requisite statement to include COMP1100 and COMP1600

Rationale: Update required due to requisite courses re-coding.

Long Course Title: Theory of Computation

Short Course Title: Theory of Computation

ACADEMIC USE

To Take Effect From: 01/01/2018

Course Minimum Unit Value: 6

Course Maximum Unit Value: 6

Does this course have an UG / PG Equivalent? Yes

UG / PG Equivalent: COMP6363

Do you want this course to be offered as a variable unit course? No

Proposed Date: 

Primary Convenor's Email: 

Primary Convenor's Name: 

Course Description: 

Course Structure and Content: 

Learning Outcomes: 

Workload: 

Prescribed Texts (Reading to Support the Course): 

Preliminary Reading: 

Indicative Reading List: 

Assumed Knowledge, Required Skills and Recommended Courses (not prerequisites): 

RSCS Curriculum Development Committee Agenda 1702
Requisite Statement for Course (includes Corequisite/Prerequisite and Incompatibility) (For more information please refer Requisite Design Guide)

To enrol in this course you must have completed (COMP1110 or COMP1140) and (COMP1600 or COMP2600). Incompatible with COMP6363.

| Indicative Assessment |  |
| Assessment Rationale |  |
| Additional Assessment |  |
| Learning Outcomes |  |
| Mode of Delivery |  |
| Quality Assurance Arrangements |  |
| Transitional Arrangements (if applicable) |  |
| Relevant ANU internal and external consultation |  |
| Intended Market and work undertaken to evaluate the market |  |
| Estimated Enrolment Numbers and rationale |  |
| Areas of Interest | Please select Areas of Interest |
| Is this required on a Sub-Plan? | Please specify Major / Minor / Spec |

ADMINISTRATION USE

| Responsible College | ANU College of Engineering and Computer Science |
| Send Notifications To | Melissa.Coppin@anu.edu.au |
| Associate Dean / Dean / College Dean | Associate Professor Jochen Trumpf |
| Is Consent Required to Enrol? | No |
| If yes, reason |  |
| Eligibility for Graduate Studies (Graduate Coursework Only) | No |
| Graduate Studies Classification 1 |  |
| Graduate Studies Classification 2 |  |
| List of course topics (Topics are descriptors on course names) (30 character limit each topic) |  |
| Academic Organisation (Offered by) | 07345 – Research School of Computer Science |
Academic Group: ENGIT (ANU College of Eng & Comp Sci)

Academic Career: 

How many times may this course be repeated after successful completion? (Please enter number only) 0

Course Grading Basis: 

Course Component: 

Is this a work experience or course internship? No
(Work Experience courses are where student learning and performance is not directed by the university)

If yes, to a work experience course, will the learning and assessment be directed by the ANU? 

Quota: 

Proposed Scheduling (for the next three years) 

Does this course have more than one owner? No

Split Ownership | Academic Organisation | Percentage EFTSL
--- | --- | ---

COURSE FEES

Field of Education Code: 

<table>
<thead>
<tr>
<th>Year</th>
<th>Per Unit ISF</th>
<th>Per Unit DTF</th>
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</tbody>
</table>

Fee rate is same as existing course: 

Department ID: CE200

Submit by Email to Course Registry
**Academic Course Form**

- **Request Type**: Course Amendment
- **Amendment Type**: Minor Amendment - Change of Pre-requisite

**Amendment Description**: Update requisite statement with incompatible courses.

**Subject Area**: COMP  
**Catalogue Number**: 6240

**Date Approved**: 

**Course Status**: Not Approved

**Long Course Title**: Relational Databases  
**Short Course Title**: Relational Databases

---

**ACADEMIC USE**

- **To Take Effect From**: 01/01/2018
- **Course Minimum Unit Value**: 6
- **Course Maximum Unit Value**: 6
- **Does this course have an UG / PG Equivalent?**: Yes  
  **UG / PG Equivalent**: COMP2400
- **Do you want this course to be offered as a variable unit course?**: No
- **Proposed Date**: 

**Proposer Name**: 

**Primary Convenor's Name**: 

**Course Description**: 

**Course Structure and Content**: 

**Learning Outcomes**: 

**Workload**: 

**Prescribed Texts (Reading to Support the Course)**: 

**Preliminary Reading**: 

**Indicative Reading List**: 

**Assumed Knowledge, Required Skills and Recommended Courses (not prerequisites)**: 

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Attachment 7A - RSCS Curriculum Proposals

RSCS Curriculum Development Committee Agenda 1702  
Page 68
<table>
<thead>
<tr>
<th>Requisite Statement for Course (includes Corequisite/Prerequisite and Incompatibility)</th>
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<tbody>
<tr>
<td>You are not able to enrol in this course if you have successfully completed COMP2400. Incompatible with COMP7240.</td>
</tr>
</tbody>
</table>

| Indicative Assessment |
| Assessment Rationale |
| Additional Assessment | Learning Outcomes |
| Mode of Delivery |
| Quality Assurance Arrangements |
| Transitional Arrangements (if applicable) |
| Relevant ANU internal and external consultation |
| Intended Market and work undertaken to evaluate the market |
| Estimated Enrolment Numbers and rationale |
| Areas of Interest |

**Is this required on a Sub-Plan?**

Please select Areas of Interest

Please specify Major / Minor / Spec

**ADMINISTRATION USE**

<table>
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<table>
<thead>
<tr>
<th>If yes, reason</th>
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<tbody>
<tr>
<td>07345 – Research School of Computer Science</td>
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</tbody>
</table>
Academic Group

ENGIT (ANU College of Eng & Comp Sci)

Academic Career

How many times may this course be repeated after successful completion?
(Please enter number only)

0

Course Grading Basis

Course Component

Is this a work experience or course internship?

No

(Work Experience course are where student learning and performance
is not directed by the university)

If yes, to a work experience course, will
the learning and assessment be directed
by the ANU?

Quota

Proposed Scheduling (for the next three years)

Does this course have more than one owner?

No

Split Ownership

Academic Organisation

Percentage EFTSL

COURSE FEES

Field of Education Code

Year

Per Unit ISF

Per Unit DTF

Fee rate is same as existing course

Department ID

CE200

Submit by Email to Course Registry
**Academic Course Form**

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<th>Subject Area</th>
<th>Catalogue Number</th>
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<td></td>
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<tr>
<th>Request Type</th>
<th>Amendment Type</th>
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<tbody>
<tr>
<td>Course Amendment</td>
<td>Minor Amendment - Change of Pre-requisite</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Amendment Description</th>
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<tbody>
<tr>
<td>Update requisite statement with incompatible courses.</td>
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<table>
<thead>
<tr>
<th>Rationale</th>
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<table>
<thead>
<tr>
<th>Long Course Title</th>
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<tbody>
<tr>
<td>Programming for Scientists</td>
<td>Programming for Scientists</td>
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<thead>
<tr>
<th>To Take Effect From</th>
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<th>Course Maximum Unit Value</th>
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<tbody>
<tr>
<td>01/01/2018</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Does this course have an UG / PG Equivalent?</th>
<th>UG / PG Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>COMP1730</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you want this course to be offered as a variable unit course?</th>
<th>Proposed Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td></td>
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<table>
<thead>
<tr>
<th>Proposer Name</th>
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<tbody>
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<table>
<thead>
<tr>
<th>ACADEMIC USE</th>
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<table>
<thead>
<tr>
<th>Primary Convenor's Email</th>
</tr>
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<tbody>
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<table>
<thead>
<tr>
<th>Primary Convenor's Name</th>
</tr>
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<table>
<thead>
<tr>
<th>Course Description</th>
</tr>
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<tbody>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Course Structure and Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<table>
<thead>
<tr>
<th>Workload</th>
</tr>
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<tbody>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Prescribed Texts (Reading to Support the Course)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Preliminary Reading</th>
</tr>
</thead>
<tbody>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Indicative Reading List</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assumed Knowledge, Required Skills and Recommended Courses (not prerequisites)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
Requisite Statement for Course (includes Corequisite/Prerequisite and Incompatibility)
(For more information please refer Requisite Design Guide)

You are not able to enrol in this course if you have previously completed COMP1730. Incompatible with COMP7230 and COMP1040.

Indicative Assessment

Assessment Rationale

Additional Assessment | Learning Outcomes

Mode of Delivery

Quality Assurance Arrangements

Transitional Arrangements (if applicable)

Relevant ANU internal and external consultation

Intended Market and work undertaken to evaluate the market

Estimated Enrolment Numbers and rationale

Areas of Interest Please select Areas of Interest

Is this required on a Sub-Plan? Please specify Major / Minor / Spec

ADMINISTRATION USE

Responsible College ANU College of Engineering and Computer Science

Send Notifications To Melissa.Coppin@anu.edu.au

Associate Dean / Dean/ College Dean Associate Professor Jochen Trumpf

Is Consent Required to Enrol? No

If yes, reason

Eligibility for Graduate Studies (Graduate Coursework Only) No

Graduate Studies Classification 1 [ ] Graduate Studies Classification 2 [ ]

List of course topics (Topics are descriptors on course names) (30 character limit each topic)

Academic Organistion (Offered by) 07345 – Research School of Computer Science
Academic Group
ENGIT (ANU College of Eng & Comp Sci)

Academic Career

How many times may this course be repeated after successful completion?
(Please enter number only)
0

Course Grading Basis

Course Component

Is this a work experience or course internship?
No

(Work Experience course are where student learning and performance is not directed by the university)

If yes, to a work experience course, will the learning and assessment be directed by the ANU?

Quota

Proposed Scheduling (for the next three years)

Does this course have more than one owner?
No

Split Ownership | Academic Organisation | Percentage EFTSL
---|---|---

COURSE FEES

Field of Education Code

<table>
<thead>
<tr>
<th>Year</th>
<th>Per Unit ISF</th>
<th>Per Unit DTF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Fee rate is same as existing course

Department ID
CE200

Submit by Email to Course Registry
Part 4 – Items of other business

Item 8  Meeting Dates 2017

Purpose
To note the remaining meeting dates for 2017.

Recommendation
That the Committee note the dates of the remaining 2017 meetings.

ACTION REQUIRED
For discussion ☑  For decision ☐  For information ☑  For response ☐

<table>
<thead>
<tr>
<th>RSE and RSCS CDC Agenda Deadline</th>
<th>RSCS CDC Meeting 12-2pm R212, Bld31</th>
<th>Notes and Deadlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 April</td>
<td>27 April</td>
<td>Deadline for award amendments, new graduate coursework awards and disestablishments of graduate coursework awards for 2018.</td>
</tr>
<tr>
<td>20 June</td>
<td>6 July</td>
<td>Deadline for amendments to courses scheduled in Semester 1, 2018.</td>
</tr>
<tr>
<td>15 August</td>
<td>31 August</td>
<td>Deadline for creation and disestablishment of undergraduate awards for 2019.</td>
</tr>
<tr>
<td>17 October</td>
<td>2 November</td>
<td></td>
</tr>
</tbody>
</table>

Item 9  Other business and question time

Purpose
For Committee members to ask questions and raise items of other business.

Recommendation
That the Committee note the matters raised and the responses.

ACTION REQUIRED
For discussion ☑  For decision ☐  For information ☐  For response ☐

Sponsor
Associate Director (Education)
Research School of Computer Science
RESEARCH SCHOOL OF COMPUTER SCIENCE
CURRICULUM DEVELOPMENT COMMITTEE

Meeting No. 1/2017 of the Research School of Computer Science Curriculum Development Committee was held on Tuesday 28 February 2017 at 12pm in Room R212, Ian Ross Building (31).

Present: Shayne Flint, Tony Hosking, Lynette Johns-Boast, Paul Melloy, Dirk Pattinson, Alistair Rendell, John Slaney, Klaus Weber, Uwe Zimmer

In Attendance: Melissa Coppin

Absent: Alexander Richardson, Qing Wang, Jochen Trumpf

PART 1 – PROCEDURAL MATTERS

ITEM 1 WELCOMES, ANNOUNCEMENTS AND APOLOGIES

1.1 Welcomes and Apologies
The Chair noted apologies from Alexander Richardson, Qing Wang and Jochen Trumpf.

1.2 Announcements
There were no announcements

ITEM 2 MINUTES

The Committee resolved to confirm the minutes of meeting 5/2016 of the RSE Curriculum Development Committee held on 6 September 2016.

ITEM 3 MATTERS ARISING FROM THE MINUTES AND ACTION ITEMS

The Chair gave and received updates on the current action item list. The updated list of ongoing items is attached to these Minutes.

ITEM 4 CONFIDENTIAL ITEMS

There were no confidential items

PART 2 REPORTS

ITEM 5 REPORT FROM THE CHAIR

The Chair advised the Committee that the University will be holding Examinations at the Australian Institute of Sport (AIS) while the Union Court Redevelopment takes place. It was also noted that the examination period would be shortened. The implications of this for students may include having up to two examinations on one day and examinations scheduled on Sundays.
The Chair advised that the College has submitted its response to the Interim Teaching Spaces Paper. It was highlighted that Computer Science require a minimum standard of technical requirements and that these have been communicated to the Deputy Vice Chancellor (Academic).

The Chair noted that COMP3310 (Computer Networks) will be externally reviewed. It was also noted that a list of courses will be generated for an internal review this semester.

The Chair advised the committee that the discussion with CSSA to find a student representative was not successful. The Committee agreed that a student representative on the Committee is beneficial.

**Action:** The Chair will undertake a process to identify a suitable student representative committee member.

**ITEM 6 REPORT FROM THE PROGRAM CONVENORS**

**Professor John Slaney – Honours**

Professor Slaney advised that Associate Professor Jochen Renz is also acting as Convenor for the Honours programs for Semester 1, 2017. It was noted that having two Convenors is working well and that A/Prof Renz is implementing new initiatives for students.

The Committee was advised that students are enrolling late in the Semester when compared to previous years. There are currently 23 students enrolled however several study contracts are still outstanding so it is expected that the total number of students will increase. It is difficult to pinpoint who these students are to prompt them to enrol. Professor Slaney advised that they are looking to implement procedures for future intakes to introduce dates and deadlines so that this does not happen in future.

**Dr Shayne Flint – BSEng (Hons) & MIPP**

Dr Flint advised that there are multiple issues with Programs and Courses, particularly Flexible Double Degrees producing incorrect study plans.

**Ms Lynette Johns-Boast – Graduate Coursework**

Ms Johns-Boast advised that there are incorrect hyperlinks on Programs and Courses, particularly in the Master degree study requirements. The Committee was also advised that there was an error where students meeting eligibility criteria for a course were being asked for a permission code. This led to a significant increase in workload for the Student Services team.

**Dr Dirk Pattinson**

Dr Pattinson provided a brief report regarding the state of the investigation about cohort structure and learning issues in COMP1100, with the perspective of understanding the feasibility and scope of a potential warm-up course.

The initial findings indicate that there is a lack of communication, structure and lessons learnt within the School. It is recommended that an assessment of the teaching perspective be conducted in addition to the student perspective. In order to achieve this, a collegiate review of courses is recommended. It is also thought that this will promote self-assessment of courses with colleagues sitting in on other lectures.

It was noted that a survey was conducted at the beginning of semester to understand student expectations of the course and will be used at the end of the semester to examine expectations vs actual experience. Additional feedback will be obtained via following Wattle forums and sitting in on tutorials. Initial results from the survey and additional feedback mechanisms has highlighted that some students are struggling with naming conventions while others find the formulaic nature of the course difficult.
The Chair highlighted that co-teaching should be encouraged and that co-taught courses would be beneficial in promoting a collegiate working environment within the School.

Mr Paul Melloy – Manager, Student Services

Mr Melloy advised that a meeting was held with the Bachelor of Applied Data Analytics students. It was highlighted that this was a networking opportunity for the students and that the response from the meeting was positive.

PART 3 CURRICULUM PROPOSALS

ITEM 7 RSE CURRICULUM PROPOSALS

The following curriculum proposals were endorsed without amendment:

<table>
<thead>
<tr>
<th>Program/Plan Amendment</th>
<th>Code</th>
<th>Title and brief description of proposed amendments</th>
</tr>
</thead>
<tbody>
<tr>
<td>BADAN</td>
<td></td>
<td>Bachelor of Applied Data Analytics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Removal of SOCY2043 from Study Requirements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subplan Amendment</th>
<th>Code</th>
<th>Title and brief description of proposed amendments</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSCC-MAJ</td>
<td></td>
<td>Research and Development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Add COMP3500 to Study Requirements</td>
</tr>
<tr>
<td>INFS-MAJ</td>
<td></td>
<td>Information Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Add COMP3425 and COMP 3430 to Study Requirements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Amendments</th>
<th>Course Code</th>
<th>Title and brief description of proposed amendments</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 6490</td>
<td>Document Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Add ‘Python’ to assumed knowledge</td>
<td></td>
</tr>
<tr>
<td>COMP 8420</td>
<td>Bio-inspired Computing: Application and Interfaces</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Add MADA to requisite statement</td>
<td></td>
</tr>
<tr>
<td>COMP 8600</td>
<td>Introduction to Statistical Machine Learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Add MADA to requisite statement</td>
<td></td>
</tr>
<tr>
<td>COMP 8260</td>
<td>Professional Practice 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Add COMP8701 to requisite statement</td>
<td></td>
</tr>
</tbody>
</table>

The following curriculum proposal was endorsed in addition to the above curriculum proposals:

<table>
<thead>
<tr>
<th>Course Amendments</th>
<th>Course Code</th>
<th>Title and brief description of proposed amendments</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 8715</td>
<td>Computing Project</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Add COMP6442 to Requisite Statement</td>
<td></td>
</tr>
</tbody>
</table>

The following curriculum proposals were endorsed subject to the stated conditions:

<table>
<thead>
<tr>
<th>Program/Plan Amendment</th>
<th>Code</th>
<th>Title and brief description of proposed amendments</th>
<th>Additional Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIT</td>
<td></td>
<td>Bachelor of Information Technology</td>
<td>Addition of VCUG2002 and VCUG2004 to Study requirements</td>
</tr>
</tbody>
</table>
ITEM 8 COMPUTING CURRICULUM PROPOSALS

The Graduate Coursework Convenor provided an overview of the proposed changes to the Graduate Diploma of Computing, Master of Computing and Master of Computing (Advanced). The proposals were discussed and various amendments suggested. It was decided that the proposal paperwork would be finalised for the next CDC meeting, scheduled for 30 March 2017.

The accreditation of the Master of Computing (Advanced) was discussed. The Chair recommended that the program amendment paperwork be submitted before accreditation is approved.

The specialisation topics were also discussed.
- It was noted that the ‘Artificial Intelligence’ specialisation is the postgraduate version of the undergraduate ‘Intelligent Systems’ specialisation. It was recommended that the names be streamlined to reduce confusion amongst students.
- The specialisation name of ‘Machine Intelligence’ was suggested in place of ‘Human Centred Software Development’

Resolution:
The paperwork for the Computing proposals will be finalised for submission to the next Curriculum Development Committee meeting on 30 March 2017.

The MATH6005 curriculum proposal was endorsed by the Committee.

ITEM 9 NEW MAJOR: CYBER SECURITY

The Chair encouraged committee members to review the paperwork submitted and requested feedback to be sent to uwe.zimmer@anu.edu.au and ramesh@cs.anu.edu.au.
PART 4   EDUCATION POLICY AND RELATED ISSUES

ITEM 10    UEC SCOPING ITEM 2017: INNOVATION SPACES ON CAMPUS

Agenda item not discussed.

PART 5   ITEMS OF OTHER BUSINESS

ITEM 11   MEETING DATES

Resolution:
The Committee resolved to note the dates of future meetings.

ITEM 12   OTHER BUSINESS AND QUESTION TIME

12.1 The BSEng (Hons) and MIPP Convenor raised concern regarding the overlap of core degree courses and courses required to complete a Major/Specialisation. The Chair advised that this would be tabled at the next meeting scheduled for 30 March 2017.

The meeting closed at 2.00pm
MLC 28/02/2017
<table>
<thead>
<tr>
<th>Meeting</th>
<th>Item</th>
<th>Action</th>
<th>Responsibility</th>
<th>Due</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1701</td>
<td>5</td>
<td>Identify a suitable student representative committee member</td>
<td>Uwe Zimmer</td>
<td>Not set</td>
<td>Ongoing</td>
<td></td>
</tr>
</tbody>
</table>