Curriculum development

Curriculum matters because of its potential impacts on students. The fundamental purpose of curriculum development is to ensure that students receive integrated, coherent learning experiences that contribute towards their personal, academic and professional learning and development.

Thinking about the design and development of curriculum involves consideration of:

- Key elements and relationships
- The Curriculum Development Process
- Developing Units
- Developing Courses

Key elements and relationships in curriculum

Staff and students are at the heart of curriculum. Curriculum design should help ensure alignment between the answers staff build into their design and those that students find through their experience of the curriculum.

The relationships between them are shaped by the answers to key questions about assessment, content and learning interactions. For example, in the diagram below the top question in each pair is a design question for staff. The lower set of questions is commonly asked by students to shape their approach to learning.

![Diagram 1. Key elements and relationships in the curriculum](image-url)

These elements and relationships are all context bound. In current systemic approaches to curriculum design, a major element of the educational context is the intended learning outcomes for students of a unit or course.
Intended learning outcomes describe the characteristics that a student should be able show on successful completion of a course or unit. In doing so, they frame and influence the detail and alignment of assessment, content and learning interactions (Biggs, 1999). Assessment gauges the extent of students' achievement of the intended outcomes, learning interactions and content should help to build towards students' achievement of those outcomes.

Diagram 1a: Alignment in the curriculum: outcomes influence internal elements – elements align towards students achieving outcomes

Intended learning outcomes are formed under the influences of:

- university policy and regulations,
- the interests of the particular academic discipline,
- our understanding of the characteristics of students entering the course of units,
- the expectations of society, professions and potential employers, and educational theory and good practices.

The translation, contextualization and accommodation of these influences in the curriculum is captured in the course or unit aim statement and the long description that appears in the course information book and on the University website.
Translating influences into design

Diagram 2: *Translating environmental influences into design via aim statements*

The unit/course aim and description should express the essential characteristics of the intended learning experience and its purpose.

**A Curriculum Development Process**

The Curriculum Development (CD) process encompasses the design and development of integrated plans for learning, the design of implementation of the plans, and of the evaluation of the plans, their implementation and the outcomes of the learning experience.

Curriculum design is a process of critical questioning to frame learning and teaching. The main purpose of the process is to translate broad statements of intent into specific plans and actions. The intention is to ensure, as far as possible, alignment between the three states of curriculum: the planned curriculum, the delivered curriculum and the experienced curriculum [from the students' point of view].
The curriculum design process at course level sets the context for unit design while the unit design, in turn, sets the context for each learning experience. Units need to be designed to come together in structured combinations to form coherent major and minor sequences and courses. Parts of the process especially at the course and unit levels overlap and ideally should occur interactively with course design informing and influencing unit design and unit design informing and influencing course design.

Diagram 4: *Interactions of levels of curriculum development*

The fundamental purpose of curriculum development is to ensure that students receive integrated, coherent learning experiences that contribute towards their personal, academic and professional learning and development.

A systemic approach to curriculum development ideally should begin by scoping the broad design boundaries and parameters then working through to the specific detail within the particular agreed boundaries and parameters. It builds a series of interconnected plans:

- the statement of aims and intended learning outcomes;
- a statement of content, assessment, learning interactions to achieve the ends;
- resource plan detailing people, materials, time, facilities, texts, references, readings, etc. needed;
- an implementation plan - assigns responsibility for who should do what, when and where
- a plan for monitoring and evaluating the success of delivery and making adjustments to improve achievements.

Such interactive ‘ends-means’ planning can help to ensure holistic, coherent design.

<table>
<thead>
<tr>
<th>The phases are:</th>
<th>Unit level Curriculum Development:</th>
<th>Course level Curriculum Development:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scoping and positioning:</strong></td>
<td>established need for and context of the unit establishment of unit aim</td>
<td>established need for and context of the course statement of course philosophy</td>
</tr>
<tr>
<td>identification of and consultation with interested parties establishment of learning ethos and intent</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Definition:</strong></td>
<td>Unit description; unit objectives(?)</td>
<td>Course rules; graduate profile; requirements to meet external accreditation requirements</td>
</tr>
<tr>
<td>development of the broad/high level description</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Detailed design:</strong></td>
<td>Detailed unit information: learning outcomes</td>
<td>Course information</td>
</tr>
<tr>
<td>intended learning outcomes</td>
<td>assessment (SAM) content learning and teaching mode(s) and methods</td>
<td>Course aims and learning outcomes</td>
</tr>
<tr>
<td>educational means plan (assessment, content and learning interactions)</td>
<td>timetable, study plan, textbooks, support resources, FLO pages</td>
<td>Program of study, sequence of units, specializations, majors</td>
</tr>
<tr>
<td>logistics/delivery resources and implementation plans</td>
<td></td>
<td>Strategies for development and assessment of Graduate Qualities</td>
</tr>
<tr>
<td>Control/evaluation plan</td>
<td>Unit evaluation plan</td>
<td>Broad consideration of delivery mode, work integrated learning, etc.</td>
</tr>
<tr>
<td><strong>Planning review and confirmation</strong></td>
<td>Confirmation of: resource availability teaching capability</td>
<td>Particular issues in design of first year curriculum Course review plan</td>
</tr>
<tr>
<td>Implementation</td>
<td>effective unit delivery</td>
<td>effective course delivery</td>
</tr>
</tbody>
</table>

---

5.
Ongoing review
formative input toward continuous improvement
refined/improved unit refined/improved course

Curriculum Development is in essence a subjective process of asking questions and making choices. Educational design is not a ‘hard’ science. Subjective decisions need to be made on the philosophy, ethos and orientation of a course or unit and what content to include and to exclude; about what textbook to use; about what references to recommend; about what student capabilities to develop. Subjective decisions are made about delivery strategies, the importance of different types of learning, and the level of support given to students as they pursue learning, and assessment. Following this guide will assist in ensuring at least ‘informed subjectivity’ considering the full scope of curriculum issues.

Unit Curriculum Development

Learning and teaching are purposeful activities. Key questions to help us think about our educational intentions for a unit are:

- where does the unit fit in the course context?
- why is the unit needed?
- what do our students need?
- what should the unit do? What is its educational aim?

Developing the unit description

The purposes and essential educational characteristics of a unit are described in the unit description. This unit description (included on the University's website and course information book) is usually the first information about a unit that prospective students encounter. It creates the first impression that can strongly influence enrolment decisions.

Detailed unit design

Detailed design must occur within the general structural and administrative parameters of what constitutes a unit and should be communicated to students in the unit booklet and Statement of Assessment Methods (SAM).

Students are at the heart of the learning experience. Different student cohorts are likely to bring different previous experiences to a learning environment. The nature of the student cohort can have a significant effect on what can be realistically achieved in a unit of a specified size (e.g. 6 points, 12 points). Detailed design needs to consider matters of educational background, cultural diversity and inclusive teaching.
Questions that need to be asked about the unit design are:

- What pre-existing knowledge/skills are required for a student to have a reasonable chance of success in achieving the intended learning outcomes of the unit?

Learning outcomes will specify the expected achievements that will be demonstrated by students in the areas of knowledge, understanding, skills and attributes as a result of their successful completion of a course or unit.

Learning outcomes are statements of the attributes and capabilities that a student should be able to display on successful completion of the unit. They provide the basis for determining student progress and designing assessment strategies and methods. Learning outcomes also provide signposts towards appropriate content and learning interactions.

Barnett, Parry and Coate (2001) identify three curriculum domains within which fundamental questions need to be asked about intended learning outcomes:

What are the intended outcomes of the learning experience for students in the domains of:

1. Knowledge and application of knowledge?
2. Action and process competencies - including generic skills?
3. Development of self?

What is the appropriate balance across the domains?
How will these outcomes contribute to the development of the UWA Educational Principles?

More specifically, the following questions determine the core learning outcomes and guide assessment, content and learning methods:

- what skills, knowledge and experience are the students expected to leave with upon successful completion of the unit?
- what must they be able to do?
- what knowledge must they have?
- what attitudes and behaviours must they display?

Beyond this core, if the learning space allows, the following questions help to establish secondary and/or extension outcomes - the things that help to identify students performing beyond the essential expectations of the unit:

- what should they be able to do?
- what knowledge should they have?
- what attitudes and behaviours should they display?

And finally, if the learning space allows, the following questions help to identify "nice to have" components: things that while not essential, help to round out, contextualise and complete the learning experience. If the content and or outcomes are over ambitious for the learning time available, these can be the first to go without compromising the essential characteristics of the learning experience.

- what could they be able to do?
- what knowledge could they have?
- what attitudes and behaviours could they display?

In developing and recording intended learning outcomes, words really matter. In particular, verbs really matter (PDF 50KB)

Learning outcomes are statements of the capabilities that a student should be able to display on successful completion of the unit. For example, in a unit on statistical process analysis might describe its intended learning outcomes as:

Aim: to introduce the concept of statistical thinking and to develop student's capabilities to use statistical thinking and methodology to improve processes

On completion of this unit a student should be able to:

1. describe the role within business/industry of statistical thinking; methods for problem solving and process improvement
2. understand and quantify variation
3. collect data for a specified purpose and recognize the limitations of existing data
4. graphically analyze data using basic tools
5. recognize situations when more advanced techniques are needed
6. derive appropriate, actionable conclusions from data analyses
7. use statistical thinking and methods in industry

• What methods will be used for assessment?

Assessment is a central element in curriculum design: it is the critical link between learning outcomes, content and teaching and learning activities. Students cannot avoid assessment activities and their impact if they want to pass a unit. Assessment not only gauges what students have learned, it shapes how many students approach learning. Often assessment is the first thing to be considered by many students in planning their engagement with a unit.

What should be learned? 
What to learn?

ASSESSMENT

How to gauge learning?
How to show learning?

The key questions for assessment are:

• how will student achievement be measured/determined?
• what methods will be used for assessment?
• what criteria will be used to determine student capabilities?

Detailed information on design and use of various assessment methods is available on the assessment web pages.

• What is the appropriate selection of content: depth/breadth, knowledge/skills and processes/values?

Content is more than just knowledge. Content selection needs to give appropriate balance to subject knowledge, process skills and the development of the student as learner as well as to detail and context.
It is more constructive to consider content in the context of assessment and learning outcomes.

The key questions then are:

- what knowledge (concepts, ideas, interpretations, applications) must/should/could be included to enable students to achieve the intended learning outcomes?
- what generic process knowledge and skills should the student have been taught by the end of the unit?
- what context in the discipline do the students need to have by the end of the unit?
- what is the appropriate balance of content: depth/breadth, knowledge/skills and processes/values?
- what content could contribute to the development of Graduate Qualities?

Each area of content should also be considered in terms of a number of criteria:

<table>
<thead>
<tr>
<th>Significance/validity</th>
<th>How essential or basic is it to the discipline?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Is the content accurate, current and relevant to the aims and intended learning outcomes?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relevance/utility</th>
<th>What is the discipline/workplace/societal value of this content?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How useful will the content be to students beyond the confines of the unit or course?</td>
</tr>
<tr>
<td></td>
<td>Will it benefit them in 'real life' and/or professional practice?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interest/learnability</th>
<th>Will this content interest the students?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Will the students be able to learn the content (in the time available)?</td>
</tr>
</tbody>
</table>
The last criterion points to a further issue: the curriculum in any unit is bounded and finite. Not everything can be included so choices and exclusions have to be made. Compressing content is generally not a successful strategy.

One perspective on curriculum development argues that the selection of content is complete NOT when as much as possible has been put in, but rather when as much as possible has been taken out without compromising the integrity of the unit as a learning experience.

Once content has been selected it needs to be organized in relation to two main principles: scope and sequence. Time is a major factor in determining the scope of content and the balance between breadth and depth.

Integration is also a factor in relation to scope: students generally learn more when they are able to connect new content to prior knowledge and to seek and find real world applications for what they are learning.

Example: A graduate level Project Unit

1. Action learning/action research: a framework for real world research
2. Systems thinking and systems theory
3. Choosing and planning a project
4. Problem solving tools
5. Putting the project into action and controlling the action
6. Review and evaluation: the project process; learning from the project.

The content sets a conceptual basis in a perspective on applied research, moves on to application through an actual project and then to reflection on theory as practice. Spiral sequencing, simple to complex.

- What learning and teaching interactions will best help to achieve the unit aim, e.g. problem based learning, work integrated learning, group based learning?

Having decided what the unit is intended to do, what capabilities students should have on successful completion, how their learning will be assessed and what content to include, we can now look at how to promote learning towards the intended learning outcomes.

Detailed consideration of learning and teaching interactions helps to clarify decisions about what practices staff wish to develop in students and how to communicate and model those practices through teaching activities.

The key questions at this stage are:
• What is the most appropriate learning and teaching approach for the unit?
• What are the most appropriate and practical learning activities?
• What are the most appropriate teaching activities, sequences and combinations?

These decisions set the broad tone of the learning experience and help to establish the role and responsibilities of the students in relation to the overall learning experience.

The selection of a dominant strategy and supporting strategies needs to take into account:

• consistency with stated aims and intended learning outcomes
• learner appropriateness
• resources
• constraints
• the learning site

A combination of strategies can promote greater learning for more students. Students learn more when they are actively engaged in their academic work; become aware of their own preferred way of learning; seek and find real world applications of what they are learning; and work regularly and productively with staff and other students.

• How will the unit be evaluated?

Planning for curriculum evaluation puts in place the mechanisms to support reflection and improvement on the delivered curriculum. While assessment focuses on student learning, curriculum evaluation considers the effectiveness of the whole learning experience. Once a unit is in place and being offered it needs to be refined and improved to ensure that it retains its relevance, currency and appropriateness for the students.
An evaluation strategy should be developed during the detailed design of the unit. Evaluation, like assessment, serves both summative and formative purposes, that is, to communicate the current standard of the unit and as a basis for improvement.

There are two key purposes:

- **Summative**
  - to certify/communicate
  - often to an external audience
  - current standards
  - to aid decisions (promotion, etc.)

- **Formative**
  - to aid learning & improvement

**Purposes of evaluation**

The University's SPOTs and SURFs provide one mechanism for unit evaluation but are insufficient when used alone. It can inform the next delivery of the unit but does not contribute to ongoing improvement during a delivery of a unit.

Formative evaluation (or evaluation of a unit in progress) can be extremely valuable for ensuring that the unit is fulfilling its intent. Students are an invaluable source of feedback especially on unit delivery. There are some useful points to keep in mind when considering formative unit evaluation particularly using information from students:

- don't ask if you don't want to know
• don't collect more data than you can quickly and easily turn into information
• always ask: how will knowing the answer to the question help improve student learning? (if you can't answer this question the evaluation possibly isn't worth doing)

You should plan to include elements of self evaluation by teaching staff, peer evaluation and student evaluation in the overall evaluation strategy as each perspective can complement the others to give a fuller picture of current standards and opportunities for improvement.

• How will the unit design be reviewed in order to confirm that it can be delivered as effectively as possible?

This final activity before delivery provides validation of the design specification and confirmation that the unit can be delivered as effectively as possible. This is a particularly important process where more than one person contributes to the delivery of a unit, so that consistence of understanding can be established.

The phase can be addressed through a relatively straight forward checklist:

• Do the lecturing staff possess appropriate skills to deliver the unit as designed?
• Do staff have a clear, consistent understanding of the intent and detail of the unit?
• Have appropriate mechanisms been provided for communication and feedback outside class contact times (contact details, email address)?
• Are staff available for out of class communication?
• Is the student workload appropriate to the point value of the unit?
• Is the workload balanced?
• Has an effort been made to make the unit as interesting as possible (given content and available resources)?
• Is active learning encouraged?
• Is there sufficient student access to resources?

Course Curriculum Development

At the course level, the CD process involves a number of tasks (checklist of tasks) that occur within a broad context that have a regard to:

• relevant strategic priorities established by the Faculty and the University and the resources required to teach the course;
emerging areas of knowledge and professional activity, and identified areas of community need and demand;
the capacity of the University to offer a high quality and sustainable academic program, having regard to the specialist areas of knowledge and areas of research focus of academic staff within relevant disciplinary and/or professional fields.

These broad contextual considerations shape the boundaries around a course and its component elements (major and minor sequences and individual units; course aims and intended learning outcomes, content, learning and teaching approach, assessment strategy).

The process of curriculum development at course level works through the following phases:

**Scoping and positioning the course**

The process of scoping and positioning gathers the evidence required for approval of a new or revised course.

The initial questions in scoping and positioning which relate to framing the CD process are:

- who should be involved in developing the course?
- what interest groups can legitimately contribute to the process? (These might include teaching team, course coordinator, professional bodies, coordinators of related courses, students)
- What are their particular expectations of the course curriculum?
- Can these expectations be reconciled/accommodated in the course?

Once these questions have been answered adequately either through direct consultation with interested parties, or through investigation of their public statements (eg, requirements for membership of professional associations, policy statements, requirements for course accreditation, etc), then the course can be positioned in context. Once this position has been established we need to ask:

- What do we know about the context of the course (the students, teaching staff, discipline, course intent and environment)?
- What level is the course intended to be (undergraduate degree/diploma or postgraduate degree/diploma)?
- Where does the course fit in the university's portfolio of courses?
- Why is the course needed?
- What do potential students need?
- What should the course do? What is its educational aim?
One strategy used to help answer these questions is a situational analysis which seeks to:

- identify the needs of students, teaching staff, professional and/or discipline groups and society
- understand the local context (including the ethos of the University/Faculty/Department/School, resource constraints and opportunities)
- facilitate planning and subsequent definition and detailed design
- provide systematic data to shape the curriculum elements

The outcome of scoping and positioning is an informed decision about the need for the course.

**Definition of the course’s essential characteristics**

This phase involves the intent of the course. It helps to specify the direction that the developers wish to set for the curriculum. The outcome is a clearer definition of the purpose of the course (its aim and intended learning outcomes) and other essential characteristics usually contained in the documentation for course approval, the course rules and the graduate profile. This phase is particularly important as the calendar entry is often the first information about a course that prospective students encounter. It creates the first impression that can strongly influence enrolment decisions.

The key questions to consider are:

- what specifically is the course intended to do?
- what aspects of the course aim are critical components of the learning experience?
- how will the academic rationale and course coherence be achieved?
- what generic and specific attributes, knowledge and skills should a graduate of the course display?

How, in general terms will the course meet the University's commitments to:

- transition and the First Year experience;
- internationalisation of curriculum;
- the incorporation of indigenous knowledge and perspectives;
- reconsideration of assessment and teaching to respond to current demands;

The phase results in a more precise, detailed statement of specific aims and outcomes for the course and a graduate profile. They provide reference points for detailed design of sequence, content, delivery, learning experiences and assessment.
Developing a profile of course graduate qualities

The graduate profile comprises statements of the attributes and capabilities that a student should have achieved on successful completion of the course. These provide the basis for determining student progress and designing teaching and learning and assessment strategies. Graduate attributes also provide signposts towards appropriate assessment strategies, content and sequences of learning experiences. The question for developing a profile of course graduate qualities is:

- what skills, knowledge and experience are the students expected to leave with upon successful completion of the course?

More precisely:

- what personal attributes should a graduate display?
- what interactive/interpersonal skills should the graduate have?
- what discipline specific attributes should a graduate have?
- What is the appropriate balance across the domains of knowledge, action and self?

Barnett, Parry and Coate (2001) identify three curriculum domains:

- knowledge of concepts and practices of the subject specialism;
- action competencies - the theory-in-use and generic (work and communication) skills acquired through doing the work of the discipline; and
- the development of ‘self’ - the student's own identity and persona in relation to the disciplinary community.

This third curriculum domain can be extended to include development of the student's identity (self) beyond the discipline within society. The UWA Educational Principles are related to all three domains.
**Detailed design of learning experiences including sequences and individual units**

This phase focuses on putting the flesh on the skeleton developed in the preceding phases. The purpose is to design and specify coherent, integrated, meaningful learning experiences, within the general structural and administrative bounds of a course that build towards the profile of graduate qualities.

Detailed design must occur within the University's rules for course structure.

![Diagram](image)

Detailed design at the course level should focus mainly on the general structure of the intended learning experiences and include consideration of:

- Particular design characteristics for **first year**
- Sequence of units
- Structural relationships between units (prerequisites and co-requisites etc.)
- How [UWA's Educational Principles](https://example.com) will be incorporated through the course structure.

The phase also encompasses the total curriculum development process for individual units.

The major output from this phase is a fully developed course outline, captured in the proposed regulations, as the basis for course delivery. It provides the template for the total package of learning experiences.

**Review Process**

**Pre-implementation**

This final activity before delivery provides validation of the design specification and confirmation that the course can be delivered as designed. At the course level the phase entails gaining at least internal University approval.
On-going

Course curriculum implementation is carried out according to University and Faculty policies and procedures for teaching, assessment and moderation. Once a course is in place it needs to be refined and improved to ensure that it retains its relevance, currency, etc.

The procedures for carrying out formal reviews of qualifications may vary in ways appropriate to the discipline under review or to the context of the review. For example, some courses need to coordinate their review activities with the requirements of professional or statutory bodies.

**Design of curriculum (course) evaluation**

Planning for curriculum evaluation puts in place the mechanisms to support reflection and improvement on the delivered curriculum. While assessment focuses on student learning, curriculum evaluation considers the effectiveness of the whole course. Once a course is in place and being offered it needs to be refined and improved to ensure that it retains its relevance, currency and appropriateness for the students.

An evaluation strategy should be developed during the detailed design of the course. While University policy requires that a major course review occurs at least every seven years, evaluation, like assessment, serves both summative and formative purposes, that is, to communicate the current characteristics and standards of the course and as a basis for improvement.

There are two key purposes:

- **Summative**
  - to certify/communicate (often to an external audience)
  - current standards
  - to aid decisions (promotion, etc.)

- **Formative**
  - to aid learning & improvement
The course evaluation plan should include both formative and summative elements and be consistent with university policy on course and unit evaluation, monitoring and review and evaluation of teaching.

Formative evaluation (or evaluation of a course in progress) can be extremely valuable for ensuring that the course is fulfilling its intent. Students are an invaluable source of feedback especially on unit delivery. The University's SPOTS and SURF (Student Evaluation of Teaching) provide one source of information towards formative course evaluation but is insufficient when used alone.

You should plan to include elements of external evaluation, self evaluation by teaching staff and peer evaluation as well as student evaluation in the overall evaluation strategy as each perspective can complement the others to give a fuller picture of current standards and opportunities for improvement.