

# Shape of ACT Senior Secondary Curriculum:

# **Construction Pathways A/M/V**

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## 1. PURPOSE

- **1.1** The Shape of ACT Senior Secondary Curriculum: Construction Pathways A/M/V will guide the writing of the revised Construction Pathways course.
- **1.2** This paper has been prepared following the deliberations of the *Construction Pathways* writing team and also in consultation with Vince Ball, ACT Regional Construction Industry Training Council (CITC)
- **1.3** The paper should be read in conjunction with *The Shape of the ACT Senior Secondary Curriculum* located at: <u>http://www.bsss.act.edu.au/curriculum/bsss\_course\_development\_consultation</u>

## 2. INTRODUCTION

- **2.1** The *Construction Pathways A/M/V* course will be the basis of planning, teaching, learning and assessment in ACT senior secondary schools.
- **2.2** The course makes provision for qualifications or a Statement of Attainment from the Construction, Plumbing and Services Training Package (CPC). Refer to training.gov.au <u>https://training.gov.au/Training/Details/CPC</u>

## 3. BACKGROUND

- **3.1** The ACT Board of Senior Secondary Studies is reviewing the *Construction Pathways A/M/V* curriculum in the course development cycle of improvement and renewal.
- **3.2** Construction Pathways A/M/V is a discreet subject that develops significant skills, knowledge and understandings for working in the construction industry, as well as a range of general capabilities to pursue a range of future occupations and life aspirations. In its updated form, this course will be contemporary and highly relevant to senior secondary students in the 21<sup>st</sup> Century.
- **3.3** All courses under development are required to meet Board design specifications and to align with Board requirements for senior secondary curriculum. These specifications align with ACARA course design specifications and provide teachers with flexibility to plan, teach and assess according to the needs and interests of their students.
- **3.4** The *Construction Pathways* course is a highly practical course, and to facilitate delivery, it is to be developed under the *Industry and Services Framework*, which prioritises practical applications. The Framework located at:

http://www.bsss.act.edu.au/ data/assets/pdf\_file/0010/411022/Industry\_and\_Services\_Framework.pdf

The rationale for this framework describes Industry and Services courses as:

Courses written under this framework provide students with knowledge, understanding and skills relating to areas of work inside the industry & services domains. In broad terms, students learn about industry practices, processes, procedures and concepts such as technical information, materials, sustainability, equipment and work health & safety (WHS). Students learn to analyse, problem solve, make decisions and develop interpersonal and intrapersonal skills suitable for employment and further training.

- **3.5** All courses based on this framework should enable students to:
  - analyse industry practices, processes and procedures
  - analyse technical information and specifications
  - understand materials and equipment
  - demonstrate industry specific literacy and numeracy skills
  - solve problems and use industry specific terminology
  - organise resources and material to create quality products and services
  - work independently and collaboratively in accordance with WHS principles and industry standards
  - communicate in a range of modes and mediums.

Courses developed under this Framework provide details of course content through the component units of the course. While this content will differ according to the particular course, all content will be chosen to enable students to work towards the achievement of the common and agreed goals of the Framework.

**3.6** Concepts, knowledge and skills from the Industry and Services Framework:

#### Concepts and knowledge

- industry practices, process, concepts and procedures
- technical information and terminology
- materials and equipment
- Workplace Health and Safety Skills.

#### Skills

- analysing and evaluating
- problem solving
- decision making
- reflecting on own learning
- industry specific literacy and numeracy
- interpersonal and intrapersonal strategies communication.
- **3.7** All courses of study for the ACT Senior Secondary Certificate should enable students to develop essential capabilities for twenty-first century learners. The Australian Curriculum General Capabilities comprise an integrated and interconnected set of knowledge, skills, behaviours and dispositions that students develop and use in their learning across the curriculum.
- **3.8** The importance of the senior years of schooling as a critical transition point for young people is highlighted in two extracts from the *Alice Springs (Mparntwe) Education Declaration*:

All Australian Governments and the education community need to support students in their senior years by helping them acquire the cognitive and social skills necessary for life after school and equip students to remain engaged in learning throughout life.

Australian Governments commit to working with the education community to provide a senior secondary education that equips young people with the skills, knowledge, values and capabilities to succeed in employment, personal and civic life.

https://docs.education.gov.au/documents/alice-springs-mparntwe-education-declaration

## 4. THE CONTEXT OF THE ACT

- **4.1** Courses of study for the ACT Senior Secondary Certificate:
  - provide a variety of pathways, to meet different learning needs and encourage students to complete their secondary education
  - enable students to develop the essential capabilities for twenty-first century learners
  - empower students as active participants in their own learning
  - engage students in contemporary issues relevant to their lives
  - foster students' intellectual, social and ethical development
  - nurture students' wellbeing, and physical and spiritual development
  - enable effective and respectful participation in a diverse society.

#### **4.2** Each course of study:

- comprises an integrated and interconnected set of knowledge, skills, behaviours and dispositions that students develop and use in their learning across the curriculum
- is based on a model of learning that integrates intended student outcomes, pedagogy and assessment
- outlines teaching strategies which are grounded in learning principles and encompass quality teaching
- promotes intellectual quality, establish a rich learning environment and generates relevant connections between learning and life experiences
- provides formal assessment and certification of students' achievements.
- **4.3** In consideration of the ACT context, and in response to contemporary research and literature, the *Construction Pathways* curriculum should include:
  - a student-centred pedagogical approach
  - the educational needs of young people with respect to construction skills, processes and industry practices
  - procedures to safely construct buildings and other structures to specifications
  - industry specific literacy and numeracy skills
  - working collaboratively and independently
  - communicating with others from diverse backgrounds and for a range of purposes
  - the Industry and Services Framework and Achievement Standards
  - the needs of different schools and sectors (government and non-government)
  - awareness of local, national and global issues
  - aesthetic, ethical, environmental and sustainability factors.

## 5. AIMS OF THE CONSTRUCTION PATHWAYS CURRICULUM

The *Shape of the Australian Curriculum: Technologies* refers to the role of senior secondary curriculum in providing specialised courses and increased options:

The senior secondary curriculum will provide students with increased opportunities to make choices about pathways through school and beyond. The Technologies curriculum for senior secondary will provide for a range of specialised courses that have explicit pathways that allow for more depth of study, multidisciplinary collaborative approaches and sophistication of engagement and can lead to tertiary study, vocational training or employment.

*Construction Pathways* enables students to acquire a range of technical, practical, personal and organisational skills valued in and beyond the workplace. Students will also acquire underpinning knowledge and skills related to work, employment and further training in the construction industry. Through the study of this subject, students will gain experiences that can be applied in a range of contexts, including work, study and recreational activities that will assist them to make informed choices for their future.

Construction Pathways builds on the Technologies learning area developed in the Australian Curriculum F - 10, in particular the Materials and technologies specialisations.

The Construction Pathways course enables students to:

- demonstrate fundamental construction skills
- interpret drawings and technical information
- plan and adapt construction processes
- develop skills in the selection of tools for specific functions and particular procedures
- develop skills in the selection and manipulation of materials based on industry-specific applications
- create structures from specifications communicated through industry-specific drawings and technical information
- appraise product quality and understand that the quality of structures depends on customer expectations of value
- · demonstrate critical thinking and problem solving ability
- evaluate industry practices, construction processes and structures
- explain and apply Workplace Health and Safety legislation, rules and procedures in building and construction workplaces
- demonstrate personal and interpersonal skills, including teamwork and communication skills

## 6. STRUCTURE OF THE CONSTRUCTION PATHWAYS CURRICULUM

### RATIONALE

*Construction Pathways* focuses on the construction processes and industry practices required to create, maintain and repair the built environment in an increasingly technological and complex world. Students develop knowledge, understanding and skills associated with traditional and contemporary tools, and materials used by the Australian building and construction industry to create structures. They examine the challenges facing the construction industry in adapting to new technology, building systems, products and practices, and explore future options.

Key concepts and ideas in *Construction Pathways* include the nature of building and construction enterprises and occupations, safety, personal and interpersonal skills in building and construction workplaces, customer expectations of value and quality, and on the sustainability of construction processes. A diverse range of occupations exist across the construction industry and the course introduces learners to the commonly recognised trades in the industry.

By undertaking construction tasks, students develop transferable skills relevant to a range of domestic and commercial applications, and future employment opportunities. They understand industry practices, interpret specifications, including information and drawings, safely demonstrate fundamental construction skills and apply skills and procedures with tools and equipment, and how to approach new tools and processes safely. Students build skills in communicating orally, and in written and graphical modes. They organise, calculate and plan construction processes and evaluate the structures they create using predefined specifications.

Through both individual and collaborative learning experiences, students learn to meet customer expectations of quality at a specific price and time. The construction tasks endeavour to promote adaptable, competent, self-motivated and safe individuals who can work with colleagues to solve problems and complete practical work according to the client brief.

The course provides opportunities to complete VET qualifications or a Statement of Attainment from the Construction, Plumbing and Services Training Package (CPC).

Students develop relevant technical, vocational and interpersonal competencies suitable for employment and further training in the construction industry. It also provides for the development of employability skills such as communication and teamwork which are transferable to other industry areas. Through the study of this subject, students will gain experiences that can be applied in a range of contexts, including work, study and recreation that will assist them to make informed choices.

#### UNITS

(May be studied in any order)

#### **Industry Practices**

In this unit, students investigate industry practices in construction tasks evident in residential and commercial contexts. They examine and implement the practices that are used to manage construction enterprises, workplace health and safety, employee personal and interpersonal skills and customer expectations to safely change raw materials into structures. Students demonstrate WHS practices in the handling of equipment, materials and in working with others.

#### **Construction Processes**

This unit focuses on construction processes that combine construction skills and procedures to safely construct buildings and other structures to specifications using tools, digital tools, equipment and materials. Students develop skills in the selection and use of materials, equipment and techniques to undertake construction projects and apply plans, specification safely using accurate measurements and calculations. They develop skills in collaboration and communication and reflection as they work individually and with others to plan and complete projects.

### **Future of Construction**

In this unit, students explore the future of building and construction by examining societal, technological and environmental challenges, occurring locally, nationally and globally. They research the opportunities and challenges for construction and tradespeople of new technologies and trends. Students gain understanding of the concepts and skills that underpin new and emerging innovations and consider the potential for innovative solutions. They consider the implications, including safety, ethical and sustainability issues, of the solutions to these challenges.

## **Construction Project**

Students demonstrate and document industry practices and construction processes to create structures or parts of structures to predefined specifications. Students apply a range of cognitive, communication, collaboration, technical and mechanical skills to demonstrate knowledge, understanding and skills in industry practices and construction processes. Students are given specifications, such as drawings and technical information, to complete a structure or part of a structure that meets the specifications.

### **Independent Study**

(Independent study units are only available to individual students in Year 12. Three units in the course are to be completed before undertaking an Independent Study. Specific unit goals, content descriptions and assessment criteria outlined in the Independent study unit are mandatory.)

An Independent study unit has an important place in senior secondary courses. It is a valuable pedagogical approach that empowers students to make decisions about their own learning. An Independent study unit can be proposed by a student and negotiated with their teacher. An Independent study unit requires the principal's approval. The program of learning for an Independent study unit must meet the content descriptions as they appear in a course.

*Please note*: Training Package requirements for students seeking VET qualifications through the Construction, Plumbing and Services Training Package (CPC) must still be met.

## 7. CONSIDERATIONS

#### 7.1 Incorporating a futures orientation

The Future of Education and Skills Education 2030 stresses the importance of being future focused in the development of curriculum for schools. The *Construction Pathways* course has a futures orientation in addressing the growing need for young people to be innovative, responsible and aware:

To prepare for 2030, people should be able to think creatively, develop new products and services, new jobs, new processes and methods, new ways of thinking and living, new enterprises, new sectors, new business models and new social models. Increasingly, innovation springs not from individuals thinking and working alone, but through cooperation and collaboration with others to draw on existing knowledge to create new knowledge. The constructs that underpin the competency include adaptability, creativity, curiosity and open-mindedness. http://www.oecd.org/education/2030-project/contact/E2030 Position Paper (05.04.2018).pdf

The course does more than prepare students for the world of work. It enables students to develop the essential capabilities for twenty-first century learners:

Education has a vital role to play in developing the knowledge, skills, attitudes and values that enable people to contribute to and benefit from an inclusive and sustainable future. Learning to form clear and purposeful goals, work with others with different perspectives, find untapped opportunities and identify multiple solutions to big problems will be essential in the coming years. Education needs to aim to do more than prepare young people for the world of work; it needs to equip students with the skills they need to become active, responsible and engaged citizens.

http://www.oecd.org/education/2030-project/contact/E2030\_Position\_Paper\_(05.04.2018).pdf

## 7.2 Construction Pathways curriculum

*Construction Pathways* has an important place in ACT senior secondary curriculum. The curriculum promotes problem-solving and decision-making, and in studying *Construction Pathways* students are active participants in their own learning. Students are challenged to think about and respond to the built environment and work practices. Their personal and social development is fostered through working independently and collaboratively, and in the development of communication skills and intercultural awareness.

## 7.3 Equity and opportunity

The *Construction Pathways* curriculum is inclusive of students' needs and interests. It provides flexibility and choice for teachers and students. The factors that influence this choice include school and community contexts, local community learning opportunities, contemporary and local issues, and available learning resources.

## 7.4 Connections to other learning areas

The *Construction Pathways* course builds on knowledge skills and understanding from students' previous studies of Australian Curriculum courses. The course builds on the Technologies learning area developed in the Australian Curriculum: Design and Technologies F - 10, Materials and technologies specialisations.

## 7.5 Role of digital technologies

Students and teachers integrate a growing range of online information, tools and applications. These include digitised online materials such as historical documents, books, newspapers, images and items from museum collections, as well as other online resources including databases, reference works and indexes to library holdings.

## 7.6 Clarity of curriculum

The curriculum is substantial and flexible. It is sufficiently rich and descriptive to guide teachers with limited experience but avoid excessive prescription that would hamper experienced teachers from exercising their skills. The curriculum document is expressed clearly in terms that are accessible to a new teacher, while allowing all teachers to enhance it with their interests and expertise.

## 7.7 Breadth and depth of study

Content descriptions specify the knowledge, understanding and skills that students are expected to learn and that teachers are expected to teach. Teachers are required to develop a program of learning that allows students to demonstrate all the content descriptions.

A program of learning is what a college provides to implement the course for a subject meeting students' needs and interests. It is at the discretion of the teacher to emphasis some content descriptions over others. The teacher may teach additional (not listed) content if it meets the specific unit goals providing that it does not duplicate content in other units.

## 7.8 The nature of the learner

The courses address the needs of diverse learners and cater for Accredited (A) and Modified (M) levels of study.

## 7.9 General capabilities

Skills and understanding related to numeracy, literacy and ICT are further developed and used in *Construction Pathways*, as are problem solving and creativity. Critical and creative thinking are developed when students explore problems, develop innovative ideas, generate solutions, and evaluate and refine their ideas. They develop personal and social capability while working collaboratively and independently, and build on self-management skills.

## 7.10 Cross curriculum perspectives

Each of the perspectives, Aboriginal and Torres Strait Islander histories and cultures, Asia and Australia's engagement with Asia, and Sustainability are represented in ways that are appropriate to in the course.

## 8. PEDAGOGY AND ASSESSMENT

The underpinning beliefs and learning principles for the development of ACT Board of Senior Secondary School curriculum as are follows:

### 8.1 Underpinning beliefs

- All students are able to learn
- Learning is a partnership between students and teachers
- Teachers are responsible for advancing student learning.



## 8.2 Learning Principles

- Learning builds on existing knowledge, understandings and skills. (Prior knowledge)
- 2. When learning is organised around major concepts, principles and significant real world issues, within and across disciplines, it helps students make connections and build knowledge structures.

(Deep knowledge and connectedness)

3. Learning is facilitated when students actively monitor their own learning and consciously develop ways of organising and applying knowledge within and across contexts.

(Metacognition)

4. Learners' sense of self and motivation to learn affects learning.

(Self-concept)

5. Learning needs to take place in a context of high expectations.

(High expectations)

6. Learners learn in different ways and at different rates.

#### (Individual differences)

7. Different cultural environments, including the use of language, shape learners' understandings and the way they learn.

(Socio-cultural effects)

8. Learning is a social and collaborative function as well as an individual one.

(Collaborative learning)

9. Learning is strengthened when learning outcomes and criteria for judging learning are made explicit and when students receive frequent feedback on their progress. *(Explicit expectations and feedback).* 

## 9. CONCLUSION

The Construction Pathways A/M/V course is to be developed under the Industry and Services Framework. Students develop an understanding of construction and the construction industry. They learn to analyse, problem solve and create solutions. The course equips students to engage confidently with appropriate technologies and to communicate appropriately to different audiences in a range of mediums. Students work both independently and collaboratively, and develop interpersonal and intrapersonal skills suitable for employment and further training.

## **10. REFERENCES**

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