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## Overview

This standard focuses on the design and manufacture of wrought and cast frameworks, and metallic components for removable prostheses using manual or digital techniques. You need to manufacture wrought components; design and manufacture burn-out patterns for cast metal frameworks; and deinvest, trim, finish or use rapid manufacturing techniques and evaluate metallic structures.

The term 'client' is used to mean the member of the oral health care team who has prescribed the custom-made prosthesis. Clients may be external to the organisation (such as other laboratories, dental practitioners, training schools) or internal (within a dental hospital). The individual is the one for whom the custom-made prosthesis is being made.

The design and manufacturing process may be carried out in a regulated dental laboratory within a variety of settings.

Users of this standard will need to ensure that practice reflects up to date information, policies and regulations.

## Performance criteria

### *You must be able to:*

1. communicate with relevant others at a pace, manner and level appropriate to their understanding, preferences and needs
2. collate and confirm accuracy of all specification information required for the design and manufacture of the wrought and cast frameworks, and metallic components for removable prostheses with relevant others.
3. select the necessary components, materials and equipment and confirm that they are fit for purpose
4. set up and operate the manufacturing equipment in accordance with the specification
5. manufacture the wrought and cast frameworks, and metallic components for removable prostheses using appropriate methods and techniques adjusting manufacturing processes as necessary.
6. deinvest or retrieve the manufactured product using an appropriate method which releases the item without causing damage
7. ensure that the manufactured product matches the specification and make any necessary adjustments
8. dispose of waste in accordance with all relevant legislation, guidelines, and workplace procedures
9. complete and store all documentation in accordance with relevant legislation, guidelines, and workplace procedures

## Knowledge and understanding

### *You need to know and understand:*

1. how to communicate with relevant others at a pace, manner and level appropriate to their understanding, preferences and needs
2. the importance of applying standard infection control precautions and the potential consequences of poor practice
3. the principles, uses, methods, techniques and equipment involved in both manual and digital design and manufacturing.
4. the skeletal anatomy, tooth morphology, orofacial musculature and temporomandibular joint function and movement
5. the classification, aetiology, including oral cavity disorders and diseases and the physiological effects of malocclusions.
6. the physiological and pathological changes associated with ageing process and trauma related to the oral environment
7. the importance of retention of the periodontal ligament and the changes in proprioception due to loss of periodontal ligament
8. the broader factors (sociological, behavioural, environmental and economic) that contribute to oral health and illness
9. the role of removable prostheses in the restoration and maintenance of:
  - tissue support
  - aesthetics
  - phonetics
  - function of occlusion and the temporomandibular joint
10. the importance of restoring and maintaining the occlusal vertical dimension
11. the benefits and restrictions of immediate tooth replacement in the provision of removable prostheses
12. the benefits and restrictions of retaining root structures in the provision of removable prostheses
13. the use and need for transitional removable prostheses
14. the design limitations of large anterior undercuts and pre-existing dental conditions
15. the principles and practice of:
  - retention and stability
  - aesthetics and phonetics
  - articulation

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16. the principles of partial removable prosthesis design
  17. the classification and sub-classification of materials on the basis of chemical composition and internal structure
  18. the mechanical, physical, thermal, chemical and biological properties of materials
  19. refractory materials for cast and mould manufacture or digital representation
  20. the purpose of different materials used in the manufacture of removable prostheses
  21. legal and physical implications of modifying manufacturer products and ensuring quality assurance .
  22. different methods of waste disposal and how to apply these
  23. the importance of updating documentation and storing individuals records safely and securely

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Design and manufacture cast and wrought metallic components and cast frameworks for removable prostheses



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