Systems and Principles Unit Syllabus

Level 3 Principles of planning telecommunications services

7540-365

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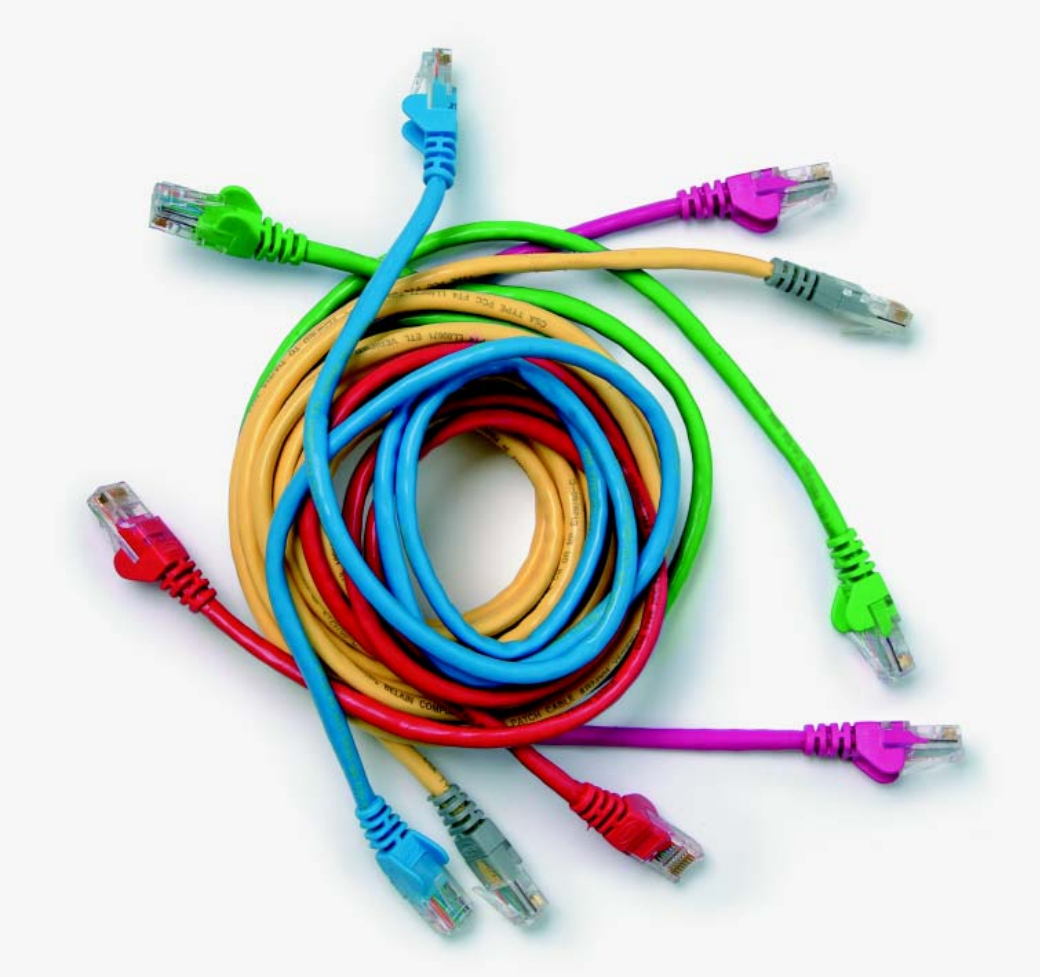
September 2010
Version 1.0



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Unit 365 Principles of planning telecommunications services

Syllabus Overview

Unit accreditation number **L/501/4003**

Credit value **10**

Rationale

This unit will provide the candidate with the basic principles needed to plan a telecommunications service. Candidates will be able to develop an understanding of how telecommunications services are specified, planned and provided.

Learning outcomes

There are **five** outcomes to this unit. The candidate will be able to:

- Prepare for and carry out a site survey for the provision of telecoms services
- Identify a range of options for the provision of telecoms services and select the optimum solution
- Produce designs for the provision of telecoms services
- Produce detailed plans for telecoms services
- Co-ordinate the provision of telecoms services

Guided learning hours

It is recommended that **65** hours should be allocated for this unit. This may be on a full time or part time basis.

Connections with other qualifications

This unit contributes to the learning outcomes and assessment criteria for the Level 3 Diploma in ICT Professional Competence.

Assessment and grading

Assessment will be by means of a **set assignment** covering both practical activities and underpinning knowledge.

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Outcome 1 Prepare for and carry out a site survey for the provision of telecoms services

Practical activities

The candidate will be able to:

1 identify the areas and systems and equipment required to be surveyed from the planning request
   - a equipment accommodation areas
   - b existing and planned systems and equipment
   - c cable routings
   - d power and environmental services
   - e building structure

2 identify the full range of data required from the survey, ie
   - a type
   - b location
   - c utilisation of plant
   - d utilisation of measurements
   - e utilisation of details of other services
   - f utilisation of hazards

3 obtain plans and records of the areas to be surveyed and interpret them
   - a floor plans
   - b utilisation records
   - c duct/ventilation prints
   - d rack layouts

4 collect and record the data required from the survey

5 record details that may affect the planning options.

Underpinning knowledge

The candidate will be able to:

1 identify a range of data required from a site survey
   - a utilisation of existing equipment and plant
   - b space available for new equipment and plant
   - c location of other services
   - d availability of other services (power, ventilation)

2 identify a range of equipment and tools required to carry out an
   - a internal site survey
   - b external site survey

3 describe the hazards and environmental constraints that may be identified during a site survey

4 identify some of the constraints that could apply to the systems and equipment to be provided
   - a accommodation constraints
   - b environmental constraints

5 give examples of health and safety issues that could apply during a site survey and explain how they may be resolved

6 describe what actions could be taken when variations are identified between the survey findings and site records and plans

7 explain why it is important to record accurately the findings of the survey.

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Outcome 2 Identify a range of options for the provision of telecoms services and select the optimum solution

Practical activities

The candidate will be able to:

1 gather sufficient information to be able to identify future demands for
   a existing telecoms services
   b proposed new telecoms services
2 plan the collection of the information in a timescale suitable for achieving the forecast future demand
3 evaluate the information objectively and use it to identify a range of options that
   a are sufficiently detailed to enable an objective comparison to be made
   b comply with relevant legislation, regulations and organisational obligations
   c consider the availability of existing systems, support services and accommodation
   d take account of longer term requirements
4 calculate the broad costs of the options considering
   a cost of equipment and materials
   b installation costs
   c running and maintenance costs
5 select and document the optimum solution in sufficient detail to meet the requirements of the customer
6 obtain authority to proceed
7 process the selected option to meet agreed timescale for the delivery of the requirements.

Underpinning knowledge

The candidate will be able to:

1 explain why it is important to consider forecasts for both existing and proposed services when considering viable options

2 describe how to confirm the accuracy, currency and reliability of forecast information

3 explain why it is important to consider the implications of existing and already planned systems and equipment, support systems and accommodation when considering options

4 list the capabilities of the telecoms system being planned

5 explain why it is important to keep abreast of new and emerging technologies

6 explain why it is important to evaluate information objectively and without bias to identify viable options

7 explain why it is important to cost options over the life time of the equipment or an accepted period

8 explain the importance of why it is necessary to evaluate, compare and rank different options according to their relative merits

9 describe the basic principles of risk, cost benefit and sensitivity analysis when considering options

10 identify what details are critical to decision makers with regards to the proposed solution

11 explain what action could be taken when their authority limit has been exceeded.

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Outcome 3 Produce designs for the provision of telecoms services

Practical activities

The candidate will be able to:

1 produce designs for the following types of telecoms systems
   - a internal networks
   - b telecom systems and equipment
   - c external networks
   - d power and environmental systems

2 produce designs that
   - a are based on information that is sufficient, valid, current and reliable
   - b take account of present and future requirements
   - c contain sufficient detail for components to be identified and quantified
   - d optimise resources
   - e are practicable, and will deliver the specified telecoms services

3 use design tools that are suitable for the purpose

4 identify components for the telecoms systems that
   - a are approved
   - b take account of relevant environmental constraints
   - c optimise costs
   - d take account of availability and required timescales

5 specify the quantities of component, taking into account
   - a existing and already planned plant and services
   - b present and predictable future requirements
   - c design requirements

6 specify locations that
   - a optimise resources, and take account of present and predictable future requirements
   - b comply with Health and Safety and other relevant legislation, and regulations
   - c minimise interference, degradation or disruption to other services and activities
   - d satisfy operational and environmental requirements and constraints
   - e take account of other relevant existing and planned plant and services

7 identify, evaluate and record actual and potential hazards or hazardous substances which may be encountered at the proposed locations

8 document the selected option in sufficient details and obtain relevant authority to proceed.

Underpinning knowledge

The candidate will be able to:

1 describe and give examples of the different types of telecoms systems
   - a internal networks
   - b telecom systems and equipment
   - c external networks
   - d power and environmental systems

2 describe the hierarchy and capacity of each of the following telecoms systems
   - a internal networks
   - b telecom systems and equipment
   - c external networks
   - d power and environmental systems

3 identify and explain the constraints and limitations of the different types of telecoms systems
   - a internal networks
   - b telecom systems and equipment
   - c external networks
   - d power and environmental systems

4 identify and explain the operational and environment requirement of the different types of telecoms systems
   - a internal networks
   - b telecom systems and equipment
   - c external networks
   - d power and environmental systems

5 explain why it is important to confirm the
   - a currency and reliability of information
   - b demands of the customer
   - c lifecycle of the systems and services

6 describe how to translate specified telecoms requirements into realistic and practical designs

7 explain where to find information
   - a on new and emerging technologies
   - b relevant to component supply

8 identify possible legislation and regulations that could govern the provision of the different types of telecoms systems and networks
   - a radio frequency allocation
   - b planning authority
   - c highways authority.

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Outcome 4 Produce detailed plans for telecoms services

Practical activities

The candidate will be able to:

1 produce plans that specify works activities that
   a comply with relevant legislation, regulations and safe working practices
   b optimise the use of resources
   c deliver the telecoms services
   d maintain existing services while work is carried out
   e control risks that have been identified
   f identify procedures and instructions to be followed

2 produce plans that
   a accurately identify equipment locations
   b identify the systems, equipment and materials to be provided
   c identify the risks that may be encountered during work activities
   d provide sufficient information to be able to carry out the work
   e identify the manpower required to carry out the work
   f ensure the resources are available to meet the required timescales

3 prepare costings that
   a are based on accurate current information
   b are within budget
   c allow for contingencies
   d are recorded clearly and accurately in an approved format

4 calculate the costs of the following resources
   a systems, equipment and materials
   b accommodation and support services
   c manpower
   d sub-contract work
   e the hire of specialist equipment.

Underpinning knowledge

The candidate will be able to:

1 list typical works packages that could be used to achieve the following

- a provide systems and equipment
- b recover systems and equipment
- c introduce systems and equipment into service
- d withdraw systems and equipment from service

2 list some of the actual and potential risks that may be encountered during work packages and describe how they may be controlled

- a working underground or underfloor
- b working overhead
- c trailing leads
- d working in close proximity to live equipment
- e hidden live services
- f hazardous materials
- g storage of materials and waste
- h poor quality IT/technology infrastructure designs
- j shared or external infrastructure
- k using specific products or services

3 describe some of the precautions that could be taken to protect existing systems and equipment during work activities

4 describe some of the possible ways of introducing telecoms systems and equipment into service and list their advantages and disadvantages

- a crash change-over
- b gradual change-over
- c growth only

5 describe the methods of assessing

- a manpower requirements
- b resource costs

6 describe where to find information on the procedures and safe working practices for providing telecoms systems and equipment

- a organisational
- b manufacturers

7 explain why it is a requirement to maintain financial confidentiality when costing plans

8 describe the circumstances where it would be necessary to allocate more than one person to carry out the work activities.

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Outcome 5 Co-ordinate the provision of telecoms services

Practical activities

The candidate will be able to:

1 identify the work activities to be scheduled and agree the resources available to undertake the work

2 obtain details of the work activities to enable the development of a realistic works programme

3 schedule the works packages taking into account

- a their required timescale
- b the availability of resources
- c the inter-dependency of work activities

4 review the works programme at regular intervals to ensure all target dates are being met and revise where necessary

5 allocate work so that it will

- a enable the effective and efficient use of resources
- b take account of team and individual competencies

6 maintain a level of resources at the work sites consistent with meeting the required timescales

7 collect information on work progress at regular intervals for analysis to confirm the targets are being met

8 report details of work completed promptly and accurately to the appropriate people.

Underpinning knowledge

The candidate will be able to:

1 explain why it is important to identify all the work activities and agree the resources available

2 explain why it is important to identify those work activities that

- a are inter-dependent
- b are on the critical path as far as the overall outcome is concerned
- c require specialist resources

3 explain why it is important to review the works programme at regular intervals

4 explain why it is important to identify the team's and individual's competencies

5 explain why it is important to regularly monitor the safety and quality standards of the people doing the work

6 list some of the implications of allowing safety and quality standards to slip

7 explain why it is important to regularly monitor the progress of the work activities

8 list some of the actions that could be taken if

- a progress is falling behind target
- b targets are not achieved
- c a budget overspend is identified.

Unit record sheet

Use this form to track your progress through this unit.

Tick the boxes when you have covered each outcome. When they are all ticked, you are ready to be assessed.

Outcome	✓	Date
1 Prepare for and carry out a site survey for the provision of telecoms services	☐	
2 Identify a range of options for the provision of telecoms services and select the optimum solution	☐	
3 Produce designs for the provision of telecoms services	☐	
4 Produce detailed plans for telecoms services	☐	
5 Co-ordinate the provision of telecoms services	☐	

Candidate Signature ..... **Date** .....

City & Guilds Registration Number .....

Quality nominee (if sampled) ..... **Date** .....

Assessor Signature ..... **Date** .....

External Verifier Signature (if sampled) ..... **Date** .....

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