

BTEC Nationals

IVA – LEARNER INSTRUCTIONS

Edexcel Level 3 BTEC National Awards

Applied Science (Applied Biology)

Applied Science (Applied Chemistry)

Applied Science (Applied Physics)

Applied Science (Environmental)

Unit 7: ICT and Laboratory Management Information Systems

**IMPORTANT: THIS SECOND EDITION REPLACES THE
LEARNER INSTRUCTIONS DOCUMENT THAT WAS POSTED
ON THE WEBSITE IN JUNE 2004. PLEASE DESTROY COPIES
OF THE PREVIOUS VERSION**

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of the specification issued June 2002

edexcel 

INSTRUCTIONS FOR LEARNERS COMPLETING IVAs

1. The Integrated Vocational Assignment (IVA) is a compulsory part of your qualification. If you do not complete the IVA you may not receive your certificate.
2. Your tutor(s) will tell you how long you have to complete the IVA and the access you may have to resources.
3. Read the IVA carefully and make sure that you understand the work you should hand in and what is required of you. If you are uncertain, discuss it with your tutor(s).
4. The IVA requires you to work by yourself and to produce original work. You should not share your work with any other learners. For example, if you produce an illustration or diagram electronically, you should not give it to another learner. Similarly, you should not accept and use such information from others. You are required to sign that the work submitted is your own.
5. If you work in a group at any stage, you must present your own responses to each task for assessment.
6. Information taken from sources for research, e.g. internet and textbooks, must be identified and not presented as your own work. You should list the sources used.
7. Some tasks may require Observation Records/Witness Statements. Your tutor(s) will organise for these to be completed and you must attach these to your submitted work.
8. In presenting your final work, you should not include draft work or reference materials such as handouts, notes and leaflets, unless the tasks specifically ask you to do so.
9. Presentation of your work:
 - Check that you have completed all tasks.
 - Label work with the appropriate task/sub task number.
 - Present tasks in the correct order.
 - Label each page with your name and page number.
 - Submit all electronic materials in paper format
 - Clearly label video or audio tapes submitted as part of your assignment.
 - All papers should be securely bound.
 - The completed IVA should NOT be presented in plastic envelopes, a box file or a lever arch file.

YOUR ASSIGNMENT TASKS

Context

The role of the technician and scientist has changed dramatically since the use of the personal computer in industry, research and service sciences. Computers are used for monitoring and control of automated production, molecular modelling, data logging and analysis with scientific instrumentation. Computers are used in information communication technology and laboratory management software.

Through your investigation of a science-based organisation, you should report on the use of information communication technology and laboratory management software in laboratories, preparation rooms, and workshops or in the field (e.g. in industry, research, education, service sciences, health sciences etc). Through investigations, case studies and simulations within a scientific industrial or service context, you should explore the specified applications of information communication technology and laboratory management software.

The information or data used in this assignment can be from a primary source obtained from a practical investigation within the laboratory, preparation room or workshop or secondary data obtained from sources such as CD ROM, e-mail, the internet or other published material. Where possible, data could be generated through the evidence required for the other units of your BTEC National Award programme.

You should demonstrate your competence in the use of ICT by reporting on your selected science-based organisation(s) and providing evidence for your other units through the use of ICT.

TASK 1

- 1.a Using your selected science-based organisation(s) or organisations from case studies, provide a list of the range of scientific applications of computers in:
 - research and development
 - medical services
 - analytical services
 - monitoring
 - production automation control.
- 1.b For the scientific applications of computers that you have listed for 1.a, describe the way in which the computers are used.
- 1.c Evaluate the effect that the use of computers have had on the cost effectiveness and efficiency of, for example:
 - research and development
 - medical services
 - analytical services
 - monitoring
 - production automation control.

This task provides evidence for unit 7 criteria P1, M1, D1.

TASK 2

- 2.a Using your selected science-based organisation(s) or organisations from case studies, provide a list of the use of ICT in laboratory management. You will need to consider aspects of Laboratory Management Information Systems (LMIS) in respect of:
- Health and Safety requirements
 - data capture, handling and retrieval
 - access to research
 - communication systems
 - financial controls
 - stock control
 - laboratory maintenance
 - laboratory and personnel management.
- 2.b For the use of ICT in laboratory management that you have listed for 2.a, describe the way in which ICT is used in LMIS.
- 2.c Evaluate the affect that the use of LMIS has had on the efficiency of dealing with, for example:
- Health and Safety requirements
 - data capture, handling and retrieval
 - access to research
 - communication systems
 - financial controls
 - stock control
 - laboratory maintenance
 - laboratory and personnel management.

This task provides evidence for unit 7 criteria P2, M2, D2.

TASK 3

- 3.a In reporting the evidence generated for the practical laboratory work from other units, reporting on your selected science-based organisation(s) or organisations from case studies, demonstrate that you can retrieve, input and store:
- scientific images and models
 - text
 - numerical data
 - graphical data
 - tabular data.

You must demonstrate that you can retrieve, input and store data appropriately into the following software packages, for example:

- scientific data/information software
- molecular modelling software
- word processing software
- spreadsheets
- information systems software.

- 3.b Demonstrate that you can retrieve, input and store data from the following sources:
- paper based publications
 - primary information from practical investigations
 - CD ROMs
 - through use of search engines
 - internet and intranet
 - simulations/case studies
 - secondary data/information from industry/services
 - professional bodies.

You must demonstrate that you can retrieve, input and store data appropriately into the following software packages, for example:

- scientific data/information software
 - molecular modelling software
 - word processing software
 - spreadsheets
 - information systems software.
- 3.c Where you have entered data into software packages, rather than using an alternative, explain the reasons for selecting the:
- data
 - source of data
 - software package.

This task provides evidence for unit 7 criteria P3, M3, D3.

TASK 4

- 4.a When preparing the report on your selected science-based organisation(s) or organisations from case studies, you must synthesise the information to meet the requirements of the assignment. The evidence generated for the practical laboratory work from other units also lends itself to being used in this task. Where relevant, you should:
- format and edit information and graphics
 - use of basic formulae (sum, subtract, multiply, divide, average) display in graphical form,
 - sort, add and delete records from an information systems package,
 - make use of templates.
- 4.b Develop the information to meet the requirements of the assignment.
- 4.c Evaluate the information to meet the requirements of the assignment. You should consider whether or not the information is sufficient to meet **all** the requirements of the assignment.

This task provides evidence for unit 7 criteria P4, M4, D4.

TASK 5

- 5.a When you are producing your report for this assignment, you must keep a record of all the files that you use to help produce your final report. You should use printouts of storage data to demonstrate that you can store the information electronically and retrieve documents when needed.
- 5.b Store the information in folders and retrieve the documents easily by file name.
- 5.c Logically store documents with appropriate names in folders and subfolders and retrieve information effectively.

This task provides evidence for unit 7 criteria P5, M5, D5.

TASK 6

- 6.a When you are producing your report for this assignment, you must demonstrate editing, formatting, calculation manipulation and checking.
- 6.b Demonstrate editing, formatting techniques and calculation manipulation with minimal corrections.
- 6.c Demonstrate a high standard of skill using editing, formatting and calculation techniques with a high degree of accuracy.

This task provides evidence for unit 7 criteria P6, M6, D6.

TASK 7

- 7.a Display and print out hard copies of information and data from which your final report is composed for presentation. You must demonstrate different types of presentation, where relevant:
 - scientific reports
 - accounts
 - articles
 - stock lists
 - inventories
 - tables
 - assignments
 - action plansYou must consider the following aspects of the format of your presentations:
 - layout
 - document structure
 - use of graphs, tables, charts, images, text and their integration.
- 7.b Display and print out hard copies of information and data that require minimal corrections for presentation.
- 7.c Display and print out hard copies of information and data that demonstrate a high standard of skill and accuracy.

This task provides evidence for unit 7 criteria P7, M7, D7.

ASSESSMENT CRITERIA

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all of the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

Unit 7: ICT and Laboratory Management Information Systems		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that the learner is able to:	To achieve a distinction grade the evidence must show that the learner is able to:
<ul style="list-style-type: none"> • identify the use of computers in relevant scientific applications • identify the use of computers in relevant laboratory management information systems • collect and enter information into relevant software packages • synthesise the information to meet the outcomes of a set task • store the information electronically and retrieve documents when needed 	<ul style="list-style-type: none"> • describe the use of computers in relevant scientific applications • describe the use of computers in relevant laboratory management information systems • collect and enter information from a variety of sources into relevant software packages • synthesise and develop the information to meet the outcomes of a set task • store the information in folders and retrieve the documents easily by file name 	<ul style="list-style-type: none"> • evaluate the use of computers in relevant scientific applications • evaluate the use of computers in relevant laboratory management information systems • justify reasons for selecting information from a variety of sources and enter the information accurately into the relevant software packages • synthesise, develop and evaluate the information to meet the outcomes of a set task • logically store documents with appropriate names in folders and subfolders and retrieve information effectively

Assessment Criteria (Continued)

Unit 7: ICT and Laboratory Management Information Systems		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that the learner is able to:	To achieve a distinction grade the evidence must show that the learner is able to:
<ul style="list-style-type: none"> demonstrate editing, formatting, calculation manipulation and checking display and print out hard copies of information and data for presentation. 	<ul style="list-style-type: none"> demonstrate editing, formatting techniques and calculation manipulation with minimal corrections display and print out hard copies of information and data which require a minimal corrections for presentation. 	<ul style="list-style-type: none"> demonstrate a high standard of skill using editing, formatting and calculation techniques with a high degree of accuracy display and print out hard copies of information and data which demonstrate a high standard of skill and accuracy.