

Name of Centre: Westminster Kingsway College	Learner achievement (please circle) <i>NB: All learner achievement is provisional until confirmed at the AVA Awards Board.</i>		
	Level Achieved:		L3
	Achievement	P	M
	Resubmission?	Y	N

Title of Access to HE Diploma:	
Unit title: Medical Imaging	Unit code: CBB084
Learner:	Tutor/Assessor: Mathew Reid
Description of Assignment: <p>Task 1: Report - 800 words (AC1.1,1.2,1.3,2.1,2.2,3.1,3.2,4.1)</p> <p>Provide a report for the Westminster Kingsway Health Centre examining whether each type of medical imaging provides good value for money. The senior management team would like the report to show the main principles behind each imaging type. You will also need to show how images of internal body structures are produced and refined. Your report should include a separate subheading for each imaging type</p> <p>X – rays CT scans Ultrasound Gamma Camera MRI</p> <p>You should explain the principles of each type and conclude when each is most suitable to use. You should include diagrams to enhance your explanations.</p> <p>Task 2: Presentation- (10 mins) (AC 5.1, 5.2)</p> <p>You will also need to produce a presentation of 10 slides to show the advantages, disadvantages, control measures and hazards of each medical imaging type. You will need to explain the control measures needed to minimise risks to patients and operating staff.</p> <p>Time constrained test (30 mins) (AC 2.3)</p> <p>Answer structured questions</p> <ul style="list-style-type: none"> You will be provided with a standard formula and data sheet You may use a scientific calculator 	

- Arrive for the exam early. If you arrive after the exam has started, you will not be permitted to enter the examination room as it would disturb your fellow students.
- Mobile telephones must be switched off and placed out of reach.
- You will be provided with a question and answer booklet.
- You are permitted to use some pens, pencils, a ruler and a rubber. You may have a bottle of water on your desk. You may use an electronic calculator.
- All your other personal belongings need to be left at the front of the room away from the desks. You are not permitted to bring any notes into the examination.
- Once the exam has started you must not communicate with anyone except the invigilator. If you need to communicate with the invigilator, you should raise your hand and wait for her/him to come to you.
- You need permission from the invigilator to leave the examination room (e.g. to go to the toilet). If you leave the room then you may not take the question paper or your answer booklet with you. If you leave without permission then you will not be permitted to re-enter the examination.
- You should not leave your desk until all your papers/scripts have been collected. You should not speak to your peers until you have left the examination room.
- Any learners found to have broken the rules of examination will have their scripts automatically invalidated. This means that you will have to undertake a resubmission examination.

Date set: 06/05/22	Date for draft submission (if applicable):	Date for final submission: 25/05/22
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Extension date (if agreed):	Signed by Tutor/Assessor to agree extension:	Date submitted:
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Internal Moderation: Yes / No Date:	Signed by internal moderator:	ON TIME / LATE
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Learner declaration:

The explanations and evaluations in this work have been developed and written by me.

I have not submitted material copied from the Internet, text books or other sources in place of my own thinking and writing.

When I have referred to the work of others I have done so to discuss, comment on or argue their ideas.

I have kept quotation and paraphrasing to an absolute minimum and only to support points I have made.

I understand that referencing the names of authors whose ideas I have used without including my own interpretation of those ideas, does not meet the assessment criteria and cannot attract the pass, merit or distinction grades.

I have not copied the work of my peers.

Learner comments: *(please use this space to comment on any aspect of the assignment when handing in your work)*

Signature:	Date:
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**TO THE LEARNER: Please attach this assignment brief to any written work you are handing in for assessment, or submit the brief as instructed.
YOUR WORK CANNOT BE ASSESSED UNLESS YOU HAVE SIGNED AND SUBMITTED THIS FORM**

Level 3	Unit title: Medical Imaging
This assignment addresses the following Assessment Criteria from the unit:	
AC	The learner can:
1.1	Explain the principles of the production and modification of X-rays for imaging.
1.2	Explain the principles of the use of X-rays in imaging internal body structures.
1.3	Explain the principles and uses of a CT scanner
2.1	Explain the principles of the production and detection of ultrasonic waves.
2.2	Explain the principle of echolocation and how this is applied to the examination of internal body structures.
2.3	Apply relevant formula to solve problems using Doppler technique and reflection of sound waves at a boundary.
3.1	Explain the choice of radionuclide in medical tracer studies.
3.2	Explain the principles of forming an image using a gamma camera.
4.1	Explain the principles of magnetic resonance imaging.
5.1	Compare and contrast the uses and relative advantages of X-rays, ultrasound, gamma camera and MRI in examining internal structures.
5.2	Evaluate the hazards of X-rays, ultrasound, gamma camera and magnetic resonance in medical imaging and explain the control methods used to minimize risk to patients and operating staff.

Level 3 units only:

Learners achieve a Pass if they meet all Level 3 Assessment Criteria for a unit. You will achieve a Merit or Distinction by meeting the following Grade Descriptors. Your tutor will give you feedback for all three grades.

Grade Descriptor	Merit	Distinction
GD1: Understanding of the subject	The student, student's work or performance: Demonstrates a very good grasp of the relevant knowledge base.	The student, student's work or performance: Demonstrates an excellent grasp of the relevant knowledge base.
GD2: Application of Knowledge	The student, student's work or performance: Makes use of relevant models and concepts with very good levels of accuracy and analysis.	The student, student's work or performance: Makes use of relevant models and concepts with excellent levels of accuracy and analysis.
GD7: Quality	The student, student's work or performance: Taken as a whole, demonstrates a very good response to the brief / assignment.	The student, student's work or performance: Taken as a whole, demonstrates an excellent response to the brief / assignment.

Grade Guidance: Learners must carefully read the guidance below which is linked to the components above

MERIT:

GD1: Understanding of the subject - Explain key imaging concepts (x ray spectra, ultrasonic transducer, radioactive emission, nmr) using relevant statements, diagrams and explanations in the report (task 1). Use data to explain hazards to health and benefits of medical imaging (task 2). Make accurate calculations in the test (task 3).

GD2: Application of knowledge - Identify the key principle or concept underlying the production and refinement of each image and use it to clearly explain the phenomenon.

GD7: Quality - Communicate ideas clearly using correct terminology. Use labelled diagrams to support written explanations. Use correct units for and appropriate precision for numerical answers.

DISTINCTION:

GD1: Understanding of the subject - Give detailed and accurate explanations of key imaging concepts (x ray spectra, ultrasonic transducer, radioactive emission, nmr) using relevant statements, diagrams and explanations in the report (task 1). Use quantitative data to explain hazards to health and benefits of medical imaging (task 2). Make accurate calculations showing the correct working and units in the test (task 3).

GD2: Application of knowledge - Identify the key principle or concept underlying the production and refinement of each image and use it to analyse the phenomenon in detail.

GD7: Quality – Communicate complex ideas clearly using correct terminology. Use labelled diagrams to support written explanations. Consistently use correct units for and appropriate precision for numerical answers.

Part A: Feedback on credit level

AC	Credit achieved (L3)	Location of evidence	Tutor/Assessor comments on assessment criteria <i>(you could also indicate on the work itself where each AC is met)</i>		
1.1		Report			
1.2		Report			
1.3		Report			
2.1		Report			
2.2		Report			
2.3		Test			
3.1		Report			
3.2		Report			
4.1		Report			
5.1		Presentation			
5.2		Presentation			
Level achieved		Tutor/Assessor's signature:			

Resubmission (if applicable) *If any of the assessment criteria for this assignment have not been met at Level 3, a resubmission may be permitted. Resubmission must follow the QAA guidelines and be permitted only once.*

Requirements for resubmission/new Task set:

Date Set:		Date due:		Date Submitted:	
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Feedback on resubmission:

Level achieved after resubmission:		Tutor/Assessor's signature:		Date:	
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Part B: Feedback on grading (Applicable only if all assessment criteria achieved at Level 3)

Grade Descriptor	Tutor/Assessor comments against grade descriptors	Grade indicator (P/M/D) <i>Please enter the final grade on page 1 based on this grade profile e.g. PPM=P</i>
GD1: Understanding of the Subject		
GD2: Application of Knowledge		
GD7: Quality		
Tutor/Assessor's reason for final grade decision (if applicable):		
Areas for development (how will the learner be able to use and improve on what they have learnt on this unit and the skills that they have used in their further studies?)		

Example questions for exam.

The Doppler shift of ultrasonic waves is used to measure the speed of blood in an artery by placing a flow meter at an angle of 30° to the artery. The velocity of sound in the blood is 1500 m/s. If the frequency of the stationary source is 5.0 MHz and the reflected sound is Doppler shifted to a wavelength of 5773.5 Hz, what is the speed of the blood flow? (1m/s)

The Doppler shift of ultrasonic waves is used to measure the speed of blood in an artery by placing a flow meter at an angle of 40° to the artery. The velocity of sound in the blood is 1500 m/s. If the frequency of the stationary source is 10.0 MHz and the reflected sound is Doppler shifted to a wavelength of 13380.5 Hz, what is the speed of the blood flow? (1.31m/s)

The Doppler shift of ultrasonic waves is used to measure the speed of blood in an artery by placing a flow meter at an angle of 60° to the artery. The velocity of sound in the blood is 1500 m/s. If the frequency of the stationary source is 1.0 MHz and the reflected sound is Doppler shifted to a wavelength of 1127.5 Hz, what is the speed of the blood flow? (1.69m/s)