EDEXCEL LEVEL 2 BTEC FIRST CERTIFICATE & BTEC FIRST DIPLOMA IN APPLIED SCIENCE

LEARNER ACHIEVEMENT TRACKING DOCUMENT

This document provides a means of tracking learners' achievement for the Edexcel Level 2 BTEC First Certificate and the BTEC First Diploma in Applied Science.

- To gain a Pass grade for a unit, all of the Pass grading criteria for the unit must be achieved.
- To gain a Merit grade for a unit, all of the Pass grading criteria and all of the Merit grading criteria for the unit must be achieved.
- To gain a Distinction grade for a unit, all of the Pass grading criteria, all of the Merit grading criteria and all of the Distinction grading criteria for the unit must be achieved.

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Unit 1: Scientific Principles - Tracking Sheet.

Criterion	Date achieved	M1. Criterion	Date achieved	Criterion	Date achieved
P1. use SI Units with quantities and amounts when describing and using scientific concepts P2. investigate the effects of forces on materials P3. distinguish between speed, velocity and acceleration P4. identify and name elements, simple molecules and compounds P5. identify and name elements, mixtures and compounds P6. draw and label a plant and animal cell, using a light microscope, annotating with functions of the components P7. describe the needs of a cell and the processes of photosynthesis and respiration P8. carry out experiments investigating factors affecting enzymes, safely, and describe the mode of action of enzymes, related to their structure. carry out experiments investigating factors.		M1. use SI Units and conversions to multiples and sub-multiples or vice versa within a scientific context M2. describe the effects of forces on materials M3. investigate motion in a straight line M4. construct formulae of simple molecules and compounds M5. describe the differences between mixtures and compounds M6. make drawings of plant and animal cells, seen with a light microscope, relating the structures to their functions M7. describe the processes of photosynthesis and respiration, relating them to the energy requirements of the cells M8. plan and carry out experiments to investigate the mode of action of enzymes and factors affecting their action drawing suitable conclusions.		D1. use SI Units and conversions to multiples and sub-multiples or vice versa within different scientific contexts D2. use different mathematical methods to analyse the effects of forces on materials D3. use different mathematical methods to analyse the effects of forces on objects D4. draw simple molecular, structural and special formulae/models D5. explain the differences between mixtures and compounds using relevant examples D6. make drawings of plant and animal cells, seen with a light microscope, comparing structures and relating to the differing functions of plant and animal cells D7. describe the processes of photosynthesis and respiration and how they meet the needs of cells, relating these to structures D8. plan, carry out and evaluate experiments to investigate the mode of action of enzymes, and factors which affect them.	

OVERALL ACHIEVEMENT FOR UNIT 1					
PASS		MERIT		DISTINCTION	

LEARNER	ASSESSOR	DATE

Unit 2: Science and the World of Work - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. illustrate the aims, structure and functions of a science based organisation or an organisation that uses science P2. investigate and describe a scientific product or service supplied by the organisation P3. identify and practically investigate a process used to make the identified product or service supplied P4. illustrate two different aspects of science as reported in the media, identifying any opinions they may be expressing P5. identify how quality of life/standard of living is affected by the impact of one science and technology discovery/invention P6. investigate a particular aspect of technology and engineering that enabled a selected science development or event to occur.		M1. describe how the different departments of the organisation work together with each other, explain how the products or services that contribute to society M2. describe why the scientific product/service is fit for purpose M3. identify the scientific principles involved in making the product or service supplied M4. describe any opinions carried or implied by the media and any influence whether political, social, technological or economic being represented M5. describe how quality of life/standard of living is affected by the impact of one science and technology discovery/invention M6. describe the innovation or source of investment that helped the scientific event to occur.		D1. describe the advantages and disadvantages that the organisation has for the lives of people in the area and for the general public D2. identify and compare a scientific product/ service from a competing organisation D3. explain the scientific principles involved in making the product or service supplied D4. analyse the opinions carried or implied by the media to form and explain your own opinion on the aspects of science reported D5. evaluate how quality of life/standard of living is affected by the impact of one science and technology discovery/invention D6. evaluate the benefits, drawbacks and costs of the science development to innovators, investors and society.	

OVERALL ACHIEVEMENT FOR UNIT 2					
PASS		MERIT		DISTINCTION	

LEARNER	ASSESSOR	DATE

Unit 3: Chemistry Applications - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. describe atomic and electronic structures of elements 1-20, including isotopes, in the periodic table P2. investigate and describe ionic, covalent and metallic bonds P3. carry out investigations to collect primary data to define what is meant by exothermic and endothermic reactions P4. investigate and use primary data to identify the factors affecting reaction rates and reversible reactions P5. investigate and describe the use of 3 main types of organic compounds used in society P6. describe how human and natural activity affect the earth and its environment.		M1. describe the patterns and trends of chemical properties of groups 1 and 7 in the periodic table M2. investigate and explain the difference in properties of substances with ionic, covalent and metallic bonded substances M3. using examples of suitable investigations collect primary data and describe the differences between exothermic and endothermic reactions M4. investigate the use of primary data to describe how factors affect reaction rates and reversible reactions M5. explain the benefits and disadvantages of using organic compounds in society M6. explain how human and natural activity affect the earth and its environment.		D1. explain the patterns and trends within groups 1 and 7 in the periodic table D2. explain bonding in terms of stability - a means of achieving an empty outer shell either by transferring or sharing electrons D3. explain the processes involved in exothermic and endothermic reactions D4. use primary data to evaluate how different factors affect reaction rates for a given industrial reaction D5. evaluate the importance of organic compounds used in society D6. evaluate the effects of human and natural activity on the earth and its environment.	

OVERALL ACHIEVEMENT FOR UNIT 3					
PASS		MERIT		DISTINCTION	

LEARNER	ASSESSOR	DATE

Unit 4: Physical Science Applications - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. describe energy cycles in diagrams and in writing P2. list the different types of ionising radiations and their properties P3. identify different type of waves and their main characteristics P4. describe two ways in which electricity may be produced P5. state methods used to investigate the universe, its galaxies, planets and stars.		M1. explain situations involving energy conversions and energy conservation within energy cycles M2. investigate the penetrating ability of different types of ionising radiation through different thickness of materials M3. investigate different types of waves travelling in different materials (including a vacuum) and between different materials M4. explain two applications of electricity M5. describe methods used to investigate the universe, its galaxies, planets and stars.		D1. calculate energy consumption and the efficiency of energy conversion in energy cycles D2. explain the reason for the different penetrating abilities of different types of ionising radiation through paper, aluminium and lead D3. explain how waves may be used for communications D4. analyse the problem of energy losses when transmitting electricity and when converting it into other forms for consumer applications D5. analyse the effectiveness and limitations of methods used to investigate the universe, its galaxies, planets and stars.	

OVERALL ACHIEVEMENT FOR UNIT 4					
PASS		MERIT		DISTINCTION	

LEARNER	ASSESSOR	DATE

Unit 5: Biological Systems - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. construct simple identification keys and describe the main characteristics within the major classification groups P2. describe an ecosystem investigated and indicate the types of interdependence of living things in it P3. describe the possible effect of human activities on the ecosystem investigated P4. describe the relationship between chromosomes, DNA and genes P5. identify and describe two examples of inherited conditions and diseases P6. describe the effects of four different factors which have a detrimental effect on human health P7. describe two control mechanisms which enable the human body to maintain optimum health.		M1. explain the need to classify organisms M2. describe examples of adaptations to the environment shown by organisms within the ecosystem M3. describe the effect of these environmental changes over time and the means of measuring them M4. describe (using examples) how variation within a species brings about evolutionary change M5. identify the mechanisms by which these conditions and diseases are inherited M6. explain the mechanisms involved in disrupting body systems, for each of the examples chosen M7. describe the differences between the actions of chemical and electrical protective mechanisms of the body.		D1. discuss the characteristics which are used to distinguish the major groups D2. construct quantitative and qualitative diagrams to demonstrate the relationships between organisms living interdependently within an ecosystem D3. analyse data relating to changes in the environment and explain how the environmental impact might be minimised in future D4. explain how genes control variation within a species using a simple coded message D5. investigate and describe the effectiveness of gene therapy to prevent inherited conditions and diseases D6. describe the social issues which arise from each of the conditions described D7. explain the effects of the chemical and hormonal controls on human health.	

OVERALL ACHIEVEMENT FOR UNIT 5					
PASS		MERIT		DISTINCTION	

LEARNER	ASSESSOR	DATE

Unit 6: Working with Science - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. identify the typical duties and responsibilities of a junior science technician and assistant practitioner P2. identify personal, communication and ICT skills of junior science technician and assistant practitioners within an organisation P3. investigate and demonstrate the role of Safe Working Practices and Health and Safety Legislation within a laboratory P4. list the key features of laboratory design and key practices and procedures within a science laboratory.		M1. describe the typical duties and responsibilities of a junior science technician and assistant practitioner M2. describe how the personal, communication and ICT skills of the junior science technician and assistant practitioners contribute to the work of an organisation M3. describe the role of Safe Working Practices and Health and Safety Legislation within a laboratory M4. describe the need for effective laboratory design, key practices and procedures within a science laboratory.		D1. explain how the typical duties and responsibilities of a junior science technician and assistant practitioner contribute to the effectiveness and efficiency of the laboratory workplace D2. evaluate how your own personal, communication and ICT skills can effectively contribute to an organisation D3. explain how Safe Working Practices and Health and Safety Legislation maintain a safe environment within a laboratory D4. evaluate the effectiveness of a laboratory design, the key practices and procedures within that laboratory.	

OVERALL ACHIEVEMENT FOR UNIT 6					
PASS		MERIT		DISTINCTION	

LEARNER	ASSESSOR	DATE

Unit 7: Anatomy and Physiology - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. describe the structures associated with the digestive, respiratory and circulatory systems. Identify the functions of each system and describe how each contributes to the maintenance of a healthy body P2. describe the structures of the nervous system and its role in coordinating body functions P3. describe the position of the main endocrine glands and describe the action produced by the hormones they produce P4. identify a homeostatic control system and describe the components and action of it P5. describe mitotic and meiotic cell division, and the role of each in monohybrid inheritance patterns P6. identify the structure and describe the functions of the male and female human reproductive systems.		M1. describe the ways in which each of these three systems interacts with the other to maintain cellular and body functions M2. explain the way in which a nerve impulse is conducted from a sensory site to produce an effect M3. explain the difference between the way hormones coordinate body functions and the way the nervous system coordinates body functions M4. describe the need for the homeostatic mechanism and its effect on the body M5. solve simple monohybrid inheritance problems M6. explain the process of hormonal control of the reproductive cycles and functions.		D1. explain the role of the three systems in the production of energy in the cells D2. compare and contrast the effects of nervous coordination and endocrine coordination D3. describe cell function and the relationship with the cell environment D4. distinguish between continuous and discontinuous variation in inherited characters D5. explain the way conception is controlled using replacement hormones.	

OVERALL ACHIEVEMENT FOR UNIT 7					
PASS		MERIT		DISTINCTION	

LEARNER	ASSESSOR	DATE

Unit 8: Environmental Science - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. identify the structure and operation of ecosystems P2. identify human activities that influence ecosystems P3. identify and use the techniques and issues involved in the management of ecosystems P4. identify the role of government and non-government bodies in environmental protection.		M1. describe the structure and operation of an ecosystem M2. describe how human activities influence ecosystems M3. describe the techniques and issues involved in the effective management of an ecosystem M4. describe the role of government and non-government bodies in environmental protection.		D1. analyse the interrelationships and roles of the different components in the structure and operation of an ecosystem D2. analyse the long term consequences of human influence on ecosystems D3. analyse own use of techniques and issues contributing to the management of an ecosystem D4. analyse the contribution of government and non-government bodies to environmental protection.	

OVERALL ACHIEVEMENT FOR UNIT 8					
PASS		MERIT		DISTINCTION	

LEARNER	ASSESSOR	DATE

Unit 9: Plants and Food - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. identify the structure and functions of the plant cell in relation to food production P2. identify the stored materials and where they are stored in the plant P3. identify where the major food plants are grown in the world, noting the climate and typical production figures P4. Identify the issues relating to food supply in national and global terms P5. investigate and describe plant breeding technology and the use of fertilisers in order to improve yields and resistance to disease.		M1. describe the structure and functions of the plant cell in relation to food production M2. explain how the stored materials are stored M3. compare and contrast the major food crops across the world, indicating the relationship between climate, food production and population M4. explain the influence of economic, and political factors on food production, and its impact on the environment M5. give examples and explain the importance plant breeding techniques that have led to improved varieties of major food plant, including genetically modified crops.		D1. explain the structure and functions of the plant cell in relation to food production D2. explain why the stored materials are stored D3. compare and contrast the advantages and disadvantages of the major food crops, particularly in terms of nutrition D4. analyse the influence of food plants on the demography of the world D5. evaluate the advantages and disadvantages of plant technology and plant breeding.	

OVERALL ACHIEVEMENT FOR UNIT 9					
PASS		MERIT		DISTINCTION	

LEARNER	ASSESSOR	DATE

Unit 10: Forensic Science Applications - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. demonstrate efficient and effective processing of a crime scene and recovery of valid evidence P2. produce and follow a realistic and achievable plan to analyse two types of biological evidence P3. produce and follow a realistic and achievable plan to analyse two types physical and chemical data P4. prepare a statement to give evidence in court identifying the techniques used to obtain the evidence and the conclusions from an investigation P5. identify the role of the forensic science service within the criminal justice system.		M1. describe the processing of a crime scene, explaining how the techniques you used obtained valid forensic evidence M2. describe how well your outcomes met the objectives of the investigation and draw conclusions M3. describe patterns in physical and chemical data and make connections M4. prepare a statement to give evidence in court describing the techniques you used to obtain evidence and explain the conclusions drawn from an investigation M5. identify the links between the forensic science service and the criminal justice system.		D1. evaluate the processing of a crime scene, interpreting how the valid evidence collected could be used in a criminal investigation D2. justify potential changes to your plans and procedures to improve the conclusions drawn D3. explain patterns in physical and chemical data and make connections D4. prepare a statement to give evidence in court evaluating the techniques you used to obtain evidence and justify the conclusions drawn from an investigation D5. explain the relationship between forensic science service and the criminal justice system.	

OVERALL ACHIEVEMENT FOR UNIT 10					
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Unit 11: Science in Medicine - Tracking Sheet.

Criterion	Date achieved	Criterion	Date achieved	Criterion	Date achieved
P1. identify and describe two biological and two physical procedures used to diagnose illness P2. identify the therapeutic drugs used to treat three given illnesses P3. describe two therapeutic techniques that are available to treat given examples of illnesses and conditions P4. describe how a new drug is identified and developed to production and marketing stages of development P5. describe the factors affecting availability of drugs and treatments to patients.		M1. explain the scientific principles underlying the two biological and two physical procedures M2. describe how the therapeutic drugs are used to treat these illnesses M3. explain the functions of each of the techniques in given treatment processes M4. explain why very few of the compounds which start the process of development ever succeed through to become licensed drugs M5. explain the general risks involved in all types of drug treatments.		D1. evaluate the advantages and disadvantages of using the two biological and two physical procedures D2. explain why the actions of therapeutic drugs are used to treat given illnesses D3. evaluate the reasons why some individuals, religions and cultures choose not to take advantage of all types of available treatments D4. review the legal requirements for the introduction of a new drug into the UK market D5. explain the reasons why decisions to give prescription drugs to some and not to others are always controversial.	

OVERALL ACHIEVEMENT FOR UNIT 11					
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LEARNER	ASSESSOR	DATE