

**YEAR: 10 Science (Double Award) Biology, Intro to chem**

Knowledge Focus: Finish 1.3 Digestion and 1.6 ecosystems and human impact on the environment, START Chem 2.1 The Nature of substances and chemical reactions



**Skills, knowledge and understanding to be developed in this Learning Plan:**

The energy content in foods and consequences when we have diets consuming excess fats, sugar, salts etc. The practical lab based skill of testing energy content in foods and associated risk assessment. The structure of food chains and further application of this to food webs and being able to construct them. The mathematical skill of calculating efficiency of energy transfers between trophic levels. The ideas of elements as pure substances; compounds as substances in which different atoms are chemically joined together and mixtures as substances in which particles are not chemically joined.

**Key terms to be learned in this**

**LP:** Energy content, Joules, proteins, vitamins, minerals, health, food chains, food webs, trophic levels, fertilisers, pesticides, battery farming, bioaccumulation, eutropication

**Week 1 - 2 Learning Objectives: 1.3 Digestion**

- Understand the scientific need for a balanced diet and the fate of digested products (fats, carbs and proteins)
- Recall functions of digested products
- Understand and explain the health implications of an unbalanced diet and provide examples



**Objective assessments:**

Be able to:  
Describe the need for a balanced diet.

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Explain the process for the investigation into the energy content of foods

Explain the implications of an unbalanced diet.

Assessment  
1.3 End of Topic

**Homework:**

Set:  
Due:

**Homework:**

Set:  
Due:

**Week 3 - 4 Learning Objectives: 1.5 Ecosystems**

- Understand the transfer of energy in food chains and food webs
- Label a food chain appropriately
- Construct pyramids of biomass and numbers
- Calculate energy transfer efficiency between trophic levels
- Describe and analyse intensive farming methods
- Understand the use of indicator species to determine pollution levels.



**Objective assessments:**

Be able to:  
Construct food chains and food webs from provided data.

State where the energy is used and why in food chains (while using this to calculate energy transfer efficiency)

Explain the process of bioaccumulation and eutropication explaining the impact this has on species and the environment.

Assessment  
1.5 End of Topic

**Homework:**

Set:  
Due:

**Homework:**

Set:  
Due:

**Week 5 - 7 Learning Objectives: 2.1 Nature of substances**

What is the basic component of matter?  
Elements can't be broken down into simpler substances.  
How can we show atoms and elements, even though we can't see them? Chemical symbols, chemical formulae & simple molecules using a diagram and key.  
How can we write chemical formulae of ionic compounds?



**Objective assessments:**

Be able to:  
Describe the difference between elements, compounds & mixtures.  
Know what an ion is and how ionic compounds are formed.  
Calculate RAM and RMM and % composition of compounds.

**Homework:**

Set:  
Due:

How to separate molecules in mixtures by physical processes.  
Chromatographic data analysis and Rf values  
What are the signs of a chemical reaction?  
Chemical reactions using word equations How to represent chemical reactions using balanced chemical equations. The percentage yield of a chemical reaction

Assessment  
2.1 End of Topic

Calculate Rf values.  
Know the signs of a chemical reaction.  
Write a word equation.  
Calculate the % yield of a chemical reaction.

**Homework:**

Set:  
Due:

**Homework:**

Set:  
Due: