TOPIC 2.7:	**States of Matter** (Learning outcomes by syllabus reference: OC1)
HOW MANY LESSONS?	1 – 2 lessons

KEYWORDS / TERMS TO BE TAUGHT			
Matter	Solid	Liquid	Gas
Mass	Melting	Compressed	Freezing
Particles	Condensing	Evaporating	

KEY CONCEPTS IN THE LESSON (OBJECTIVES)		
*What students **must** know or be able to do*	*What students **should** know or be able to do*	*What students **could** know or be able to do*
To be able to identify solids, liquids and gases, and their main properties	To be able to identify all the properties of solids, liquids and gases To be able to identify changes of state	To be able to discuss changes of state in terms of the energy of molecules

SEQUENCE OF LESSON
1. Introduce the concept of matter. Allow students to relate personal experiences of solids, liquids and gases. This could be facilitated by using the *States of Matter Introduction* PowerPoint and encouraging student input during the presentation. 2. Carry out experimental activities (changes of state) in groups with a focus on safety. Discussion of key vocabulary, risks and safety rules 3. Review – whole class discussion. Possibility of using *States of Matter Quiz* PowerPoint to facilitate student understanding. 4. Further class work/homework – see *States of Matter Worksheet*.

1. DIFFERENTIATE BY CONTENT (In what ways can I vary the content of what I am teaching?)		
(A) Complexity of content: (concrete, symbolic, abstract)		
Concrete	*Symbolic*	*Abstract*

Real materials associated with matter (e.g. ice, water in a beaker, steam, wax, sand, blocks of wood or metal, air in a balloon)	Particle arrangements in solids, liquids and gases	Movement of particles in solids, liquids and gases and during changes of state
(B) Variety of resources		
As listed above		
(C) Variety of learning environments		
Classroom, school laboratory, computer room		

2. DIFFERENTIATE BY PROCESS (How will I teach the lesson?)
Sequence of lesson as laid out above ➢ Introduction – using concrete material or a general class discussion ➢ Teacher may demonstrate use of apparatus to the class, emphasising safety. ➢ Closely observe students as they perform changes of state activities individually or in pairs. For resources, guidance and support related to facilitating student experiments and investigations, see **www.juniorscience.ie** ➢ Possible use of *States of Matter Quiz* PowerPoint to facilitate discussion

3. DIFFERENTIATE BY OUTCOME / PRODUCT **(How will the student demonstrate understanding?)**

See *Worksheets*, *Classroom Activities* and *Experiments* sections of this resource pack.

- Students may draw particles representing solids, liquids and gases in their copies and/or short descriptions of how these molecules behave.
- Offer students a choice of learning activities. Students may design a poster, write a poem/song or create a radio documentary on tape describing how molecules behave in solids, liquids and gases.
- Whole class review work completed at end of class.
- Homework: *States of Matter Worksheet* if not used for class work. Specify time to be allocated to this work at home

FINALLY - ANY OTHER POSSIBILITIES FOR THIS LESSON?

- Common changes of state in everyday life
- Collage of scenes showing solids, liquids and gases
- Role play using students as individual particles in solids, liquids and gases
- Other written activities, e.g. a log of the different types of matter in the room
- Extension exercise: Where would you not find matter?
- For advice on enhancing curricular access through the use of mobile ICT, see **www.laptopsinitiative.ie**