

UNIT 7: Human Reproduction

Recommended Prior Knowledge: Students should have knowledge of the basic principles of sexual reproduction, which has been covered in Unit 6. They should also understand the nature of hormones, dealt with in Unit 5.

Context: this Unit builds on the work on sexual reproduction covered in the early part of Unit 6. This Unit and Unit 6 lay the foundations for the study of genetics, to be covered in Unit 8.

Outline: This Unit considers the biological aspects of human reproduction, and also provides the opportunity to discuss some of the social and ethical issues associated with birth control, artificial insemination and fertility drugs. It is a relatively short Unit, with no real opportunities for practical work. Some teachers may therefore like to combine it with Unit 6, or with Unit 8.

	Learning Outcomes	Suggested Teaching Activities	Online Resources	Other resources
III 1.2 .2	Describe the structure and function of human male and female reproductive systems, including the menstrual cycle.	Diagrams and models can be used to illustrate the structure of the male and female reproductive systems. Students should be able to interpret either front or side views. For Core students, there is no need to know anything about the hormonal control of the menstrual cycle.		
III 1.3	Describe the roles of testosterone and oestrogen in the development and regulation of secondary sexual characteristics at puberty.	The general characteristics of hormones will already have been covered, and here two others are introduced.		
III 1.3	Describe the sites of production and the roles of oestrogen and progesterone in the menstrual cycle.	Extension candidates should be aware of the cyclical secretion of oestrogen and progesterone from the ovary. They do not need to know any detail of the development of follicles within the ovary, nor the roles of FSH and LH.		
III 1.2 .2	Describe sexual intercourse, fertilisation and implantation.	Students will already have met the idea of gametes and fertilisation, and these ideas should be revisited here before considering how they occur in humans.		

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III 1.2 .1	<p>Describe the development of the foetus in terms of placenta, maternal and foetal blood supplies and exchange of materials.</p> <p>Describe ante-natal care in terms of dietary requirements and maintaining good health birth.</p>	<p>Diagrams should be drawn to show the relationship between the foetus, umbilical cord and placenta. The large surface area of the placenta villi can be compared to that of the lungs or small intestine; in each case, the large surface area helps to maximise the rate of exchange across it. Make sure that students understand that maternal and foetal blood do not mix. They should be precise in naming materials that cross the placenta, for example mentioning glucose and amino acids rather than 'nutrients', and also understand that they may cross by diffusion. The effects of smoking on health, first met in Unit 4, can be looked at again here in relation to pregnancy.</p>		
III 1.2 .2	<p>Indicate the functions of the amniotic sac and amniotic fluid.</p>	<p>The idea of protection of the embryo must be emphasised. The amniotic fluid produces a cushioning effect from physical damage. The amniotic sac provides protection against infection. (Details of the composition of the fluid are not required)</p>		
III 1.3	<p>Describe the sites of production and the roles of oestrogen and progesterone in pregnancy.</p>	<p>This can be linked with the roles of these hormones in the menstrual cycle.</p>		
III 1.2 .2	<p>Describe the advantages of breast feeding compared with bottle feeding.</p>	<p>This topic can be dealt with through discussion, perhaps after students have done a little research of their own. The biological advantages of breast-feeding are incontrovertible, but students should also be aware of social or other reasons why some mothers find this difficult and prefer to use formula milk.</p>	<p>Benefits of breast feeding http://www.cyberparent.com/bfeed2/</p>	
III 1.4	<p>Discuss the social aspects of artificial insemination and the use of hormones in fertility drugs.</p>	<p>A simple factual treatment of what artificial insemination is, and the use of fertility drugs, will be required before students can discuss the social and ethical issues</p>		

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		associated with it. These issues regularly find their way into the news, and it would be useful to collect a range of articles from newspapers and magazines that could form the basis for discussion.		
III 1.4	Name and describe the following methods of birth control: natural, chemical, mechanical and surgical	A simple description of the biological basis of the different types of birth control is required. Students should also understand the relative effectiveness of each, and may want to discuss the ways in which religious or cultural beliefs can affect their use. The advantages of condoms in reducing the risk of transmitting diseases should also be considered.		
III 1.5	Describe the symptoms, signs, effects and treatment of gonorrhoea. Describe the methods of transmission of human immunodeficiency virus (HIV) and the ways in which it can be prevented from spreading.	Gonorrhoea is used as an example of a relatively common sexually-transmitted disease caused by a bacterium, readily treated with antibiotics. HIV, on the other hand, is caused by a virus, and as yet no cure is available. Although no detail is expected of the symptoms of AIDS, it could be useful to deal with these briefly, with reference back to the functions of white blood cells in Unit 4.		