Access to Higher Education Unit

This unit forms part of an Access to HE Diploma. If delivering the graded version of this unit, please refer to the Provider Handbook for details on grading descriptors and the application of these across units within your programme.

Unit Title: Fetal Development

Graded Unit Reference Number: GA36BIO53

Ungraded Unit Reference Number: UA36BIO53

Module: Biology

Level: Three (3)

Credit Value: Six (6)

Minimum Guided Learning Hours: 60

Units barred for selection against this unit:

- **Human Reproduction (GA33BIO24 / UA33BIO24)**
- **Human Reproduction and Genetics (GA36BIO35 / UA36BIO35)**
- **Human Reproduction and Sexual Health (GA33BIO42 / UA33BIO42)**

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
1. Understand fetal development throughout pregnancy	1.1 Describe the stages of embryonic and fetal development from conception to birth.
	1.2 Explain the development and function of major fetal systems.
	1.3 Describe common developmental abnormalities and their potential impact on fetal outcomes.
2. Understand antenatal fetal monitoring methods.	2.1 Describe the antenatal monitoring methods in the examination of the progression of a fetus: a) Internal ultrasound b) External ultrasound c) Fundal height
	2.2 Explain the use of a doppler ultrasound as a method to monitor the health of a fetus.

		2.3	Compare the advantages and limitations of different monitoring approaches.
3.	Understand the monitoring of a fetus during labour	3.1	Summarise how the fetus is monitored during the stages of labour.
		3.2	Explain how monitoring may lead to interventions and changes to birthing plans during labour.
		3.3	Evaluate reasons why additional monitoring during labour may be recommended.
4.	Understand the detection and possible interventions of specific fetal disorders and disabilities	4.1	Explain the screening processes for: a) Patau's syndrome b) Edwards' syndrome c) Down's syndrome d) Sickle Cell disease.
		4.2	Justify the use of further diagnostic testing following abnormal screening results or identified risk factors.
5.	Understand the process of miscarriage and termination	5.1	Describe the processes of medical termination and surgical termination of pregnancy.
		5.2	Explain the risk factors of miscarriage and the potential medical or surgical intervention which may be necessary.

Indicative Content Learners could cover the following: (The information below is provided for guidance only and is not mandatory)	
LO1	AC1.1 **Stages of development:** Fertilisation (fusion of gametes), zygote formation, implantation in uterine lining. Embryonic stage (weeks 1–8): rapid cell division, differentiation, formation of major organs (organogenesis). Fetal stage (weeks 9–birth): growth, maturation, increasing complexity of organ systems. **Key milestones:** development of heartbeat, limb formation, neural tube development, detectable movements, viability thresholds. AC1.2 **Major systems:** Cardiovascular (heart formation, early circulation), nervous system (brain and spinal cord development), respiratory system (lung growth, surfactant production), musculoskeletal system (bone formation and movement). **Function:** interdependence of systems to support growth, oxygenation, and preparation for extra-uterine life. AC1.3 **Developmental abnormalities:** chromosomal conditions (Down's syndrome, Edwards', Patau's), structural defects (neural tube defects, congenital heart

	defects). **Impact:** effects on growth, organ function, viability, and long-term health outcomes. **Influencing factors:** maternal health, nutrition, exposure to teratogens (alcohol, drugs), infections, genetic inheritance.
LO2	AC2.1 **Monitoring methods:** Internal ultrasound (transvaginal scanning in early pregnancy), external ultrasound (dating, anomaly and growth scans), fundal height measurement (assessment of fetal growth using centile charts). **Purpose:** tracking development, identifying abnormalities, assessing growth and gestational age. AC2.2 **Doppler ultrasound:** use of sound waves to measure blood flow in fetal vessels and placenta. **Application:** monitoring fetal heart rate, detecting restricted growth or placental insufficiency. **Advantages/limitations:** non-invasive and widely used; may require skilled interpretation and may not detect all complications. AC2.3 **Comparison of approaches:** ultrasound vs fundal height vs Doppler monitoring. **Factors:** accuracy, reliability, accessibility, cost, level of invasiveness. **Suitability:** low-risk vs high-risk pregnancies, frequency of monitoring required, clinical context.
LO3	AC3.1 **Monitoring during labour:** intermittent auscultation (Pinard stethoscope, handheld Doppler), continuous electronic fetal monitoring (cardiotocography – CTG). **Parameters observed:** fetal heart rate, baseline variability, accelerations/decelerations, uterine contractions. **Stages of labour:** monitoring adapted depending on progress and clinical risk factors. AC3.2 **Impact on interventions:** identification of abnormal fetal heart patterns leading to escalation of care. **Changes to plans:** assisted delivery (forceps, ventouse), emergency caesarean section, increased monitoring. **Examples of interventions:** maternal repositioning, oxygen administration, intravenous fluids, cessation of labour-inducing drugs.

	AC3.3 **Reasons for additional monitoring:** maternal conditions (pre-eclampsia, diabetes), reduced fetal movements, suspected growth restriction, multiple pregnancy, presence of meconium, prolonged labour. **Risk assessment:** continuous vs intermittent monitoring decisions based on clinical need.
LO4	AC4.1 **Screening processes:** combined screening (nuchal translucency scan and blood tests), non-invasive prenatal testing (NIPT), newborn screening programmes. **Conditions screened:** Down's syndrome (Trisomy 21), Edwards' syndrome (Trisomy 18), Patau's syndrome (Trisomy 13), sickle cell disease (inherited blood disorder). **Purpose:** risk identification rather than definitive diagnosis. AC4.2 **Further diagnostic testing:** amniocentesis, chorionic villus sampling (CVS). **Indications:** abnormal screening results, increased risk factors (family history, maternal age, previous pregnancy outcomes). **Justification:** confirming diagnosis, supporting informed decision-making, planning care or intervention. **Risks and considerations:** procedure-related miscarriage risk, accuracy of results, ethical considerations (informed consent, parental choice).
LO5	AC5.1 **Termination of pregnancy:** medical termination (use of medication to induce miscarriage), surgical termination (procedures such as vacuum aspiration or dilation and evacuation). **Processes:** stages involved, clinical settings, timeframes depending on gestation. **Indications:** maternal health, fetal abnormalities, personal or social circumstances (within legal framework). AC5.2 **Risk factors for miscarriage: c**hromosomal abnormalities, maternal age, chronic illness, lifestyle factors (smoking, alcohol), infection. Diagnosis and management: identification of symptoms (bleeding, pain), ultrasound confirmation. **Interventions:** expectant management, medical management, surgical intervention where necessary. **Impact:** physical effects and emotional/psychological considerations for individuals and families.