

Course Overviews DP , UWC Thailand 2017-2018

All units taught in grades 11 and 12 are continuously being developed and improved to best meet the needs of the students at UWCT. Therefore, the following overview is only a reflection of current plans for the course. Some changes to these course overviews may occur as a result of planning done throughout the academic year.

Grade	Time Frame	Topic number and title	Approaches To learning skills taught / learnt / developed in this unit	Content (topics / knowledge/ subject specific skills)	Connections to TOK	Summative assessment
11 or 12	In lessons or weeks	From subject guide	Thinking Skills Communication skills Social skills Self-management skills Research skills Inquiry Conceptual understanding Local and global contexts Teamwork and collaboration Differentiated Informed by assessment	From subject guide These are the significant ideas from each topic - the content is way to large!	Ways of Knowing: Language Sense Emotion Reason Imagination Faith Intuition Memory Areas of Knowledge: Mathematics Natural sciences Human sciences History The arts Ethics Religious knowledge systems Indigenous knowledge systems	Used in the gradebook
11	4 weeks	Topic 1.1 - Environmental Value Systems Topic 1.2 - Systems and Models Topic 1.3 - Energy and Equilibria	Thinking skills - Reflecting on one's own E.V.S Conceptual understanding - There are some foundational concepts that underpin all of ESS	<ul style="list-style-type: none"> Historical events, among other influences, affect the development of environmental value systems (EVs) and environmental movements. There is a wide spectrum of EVs, each with its own premises and implications. A systems approach can help in the study of complex environmental issues. The use of systems and models simplifies interactions but may provide a more holistic view without reducing issues to single processes. The laws of thermodynamics govern the flow of energy in a system and the ability to do work. Systems can exist in alternative stable states or as equilibria between which there are tipping points. Destabilizing positive feedback mechanisms 	Shared and Personal Knowledge - EVs shape the way we perceive the world/environment - which other value systems can shape the way we view the world	Quiz End of unit test

				will drive systems towards these tipping points, whereas stabilizing negative feedback mechanisms will resist such changes.		
11	8 weeks	Topic 8.1 - Human Population Dynamics Topic 8.2 - Resource Use in Society Topic 1.4 - Sustainability Topic 8.4 - Human population Carrying Capacity	Self-management - managing time; meeting deadlines Collaboration -	<ul style="list-style-type: none"> • A variety of models and indicators are employed to quantify human population dynamics. · • Human population growth rates are impacted by a complex range of changing factors. • The renewability of natural capital has implications for its sustainable use. · • The status and economic value of natural capital is dynamic. • All systems can be viewed through the lens of sustainability. • Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs. · • Environmental impact assessments (EIAs) play an important role in sustainable development. • Environmental indicators and ecological footprints can be used to assess sustainability. • Human carrying capacity is difficult to quantify. • The EF is a model that makes it possible to determine whether human populations are living within carrying capacity. 	Ethics - As resources become scarce, we have to make decisions about how to use them - to what extent should potential damage to the environment limit our pursuit of knowledge?	Quiz Test IA (PLA)
11	10 weeks	Topic 2: Ecosystems and Ecology	Thinking skill - learning how to carry out a scientific investigation Inquiry - see above	<ul style="list-style-type: none"> • A species interacts with its abiotic and biotic environments, and its niche is described by these interactions. · • Any system has a carrying capacity for a given species. • Populations change and respond to interactions with the environment. • The interactions of species with their environment result in energy and nutrient flows. • Photosynthesis and respiration play a significant role in the flow of energy in communities. • The feeding relationships of species in a system can be modelled using food chains, food webs and ecological pyramids. • Ecosystems are linked together by energy and matter flows. • The Sun's energy drives these flows, and humans are impacting the flows of energy and matter both locally and globally. • Climate determines the type of biome in a given area, although individual ecosystems may vary due to many local abiotic and biotic factors. • Succession leads to climax communities that may vary due to random events and interactions over time. This leads to a pattern of alternative stable states for a given 	Language - Through the use of specialized vocabulary, is the shaping of knowledge more dramatic in some areas of knowledge compared to others?	Quiz Test IA (RAC)

				<ul style="list-style-type: none"> ecosystem. Ecosystem stability, succession and biodiversity are intrinsically linked. The description and investigation of ecosystems allows for comparisons to be made between different ecosystems and for them to be monitored, modelled and evaluated over time, measuring both natural change and human impacts. Ecosystems can be better understood through the investigation and quantification of their components. 		
11	9 weeks	Topic 3: Biodiversity and conservation	<p>Research skills - researching a conservation project</p> <p>Local and global contexts - evaluating local and global conservation projects</p>	<ul style="list-style-type: none"> Biodiversity can be identified in a variety of forms, including species diversity, habitat diversity and genetic diversity. The ability to both understand and quantify biodiversity is important to conservation efforts. Evolution is a gradual change in the genetic character of populations over many generations, achieved largely through the mechanism of natural selection. There have been major mass extinction events in the geological past. Environmental change gives new challenges to species, which drives the evolution of diversity. While global biodiversity is difficult to quantify, it is decreasing rapidly due to human activity. Classification of species conservation status can provide a useful tool in the conservation of biodiversity. The impact of losing biodiversity drives conservation efforts. The variety of arguments given for the conservation of biodiversity will depend on EVSs. There are various approaches to the conservation of biodiversity, each with associated strengths and limitations. 	Reason - The term "biodiversity" has replaced the term "nature" in much literature on conservation issues - does this represent a paradigm shift?	Quiz Test IA (DEV)
12	6 weeks	<p>Topic 1.5: Humans and Pollution</p> <p>Topic 8.3: Solid Domestic Waste</p> <p>Topic 4.4: Water pollution</p> <p>Topic 6: Atmospheric Systems and Societies</p>	<p>Collaboration Skills - working together to collect data for a water pollution lab.</p> <p>Communication skills - listening to a talk at the Phuket incinerator and asking questions.</p> <p>Thinking skills - Evaluating the many solutions to mitigate and clean up pollution to the atmosphere.</p>	<ul style="list-style-type: none"> Pollution is a highly diverse phenomenon of human disturbance in ecosystems. Pollution management strategies can be applied at different levels. Solid domestic waste (SDW) is increasing as a result of growing human populations and consumption. Both the production and management of SDW can have significant influence on sustainability. Water pollution, both groundwater and surface water, is a major global problem, 	<p>Reason - Experts sometimes disagree about pollution management strategies - on what basis might we decide between the judgments of the experts if they disagree.</p> <p>Ethics - The rise urbanization and industrialization has led to an increase in regional and global pollution - to what</p>	Quiz Test IA on river pollution (full)

				<p>the effects of which influence humans and other biological systems.</p> <ul style="list-style-type: none"> • The atmosphere is a dynamic system that is essential to life on Earth. • The behavior, structure, and composition of the atmosphere influence variations in all ecosystems. • Stratospheric ozone is a key component of the atmospheric system because it protects living systems from the negative effects of UV radiation from the sun. • Human activities have disturbed the dynamic equilibrium of stratospheric ozone formation. • Pollution management strategies are being employed to conserve stratospheric ozone. • The combustion of fossil fuels produces primary pollutants that may generate secondary pollutants and lead to photochemical smog, the levels of which can vary by topography, population density, and climate. • Photochemical smog has significant impacts on societies and living systems. • Photochemical smog can be reduced by decreasing human reliance on fossil fuels. • Acid deposition can impact living systems and the built environment. • The pollution management of acid deposition often involves cross-border issues. 	<p>extent should the non-polluting countries have in the clean-up of global pollution?</p>	
12	6 weeks	Topic 7: Climate change and energy production	<p>Thinking Skills - Evaluate the advantages and disadvantages of different energy sources for a particular country/region.</p> <p>Research skills - Discuss mitigation and adaptation strategies for climate change for the country that each individual student is from.</p>	<ul style="list-style-type: none"> • There is a range of different sources available to societies that vary in their sustainability, availability, cost, and socio-political implications. • Climate change has been a normal feature of the Earth's history, but human activity has contributed to recent changes. • Even though there has been debate over climate change, there is a large amount of evidence to show that climate change causes widespread and significant impacts on a global scale. • Mitigation attempts to reduce the causes 	<p>Personal and Shared Knowledge: As technology continues to find answers to the need and use of energy, countries, companies, and entrepreneurs must share ideas to allow all individuals to have cheap access to renewable energy.</p>	<p>Quiz Test Presentation on forms of energy</p>

				of climate change and adaptation attempts to manage the impacts of climate change?		
12	5 weeks	Topic 4: Water and Aquatic Food Production Systems and Societies	<ul style="list-style-type: none"> - Conceptual understanding - use of a watershed model to understand the water cycle. - Thinking skills - The ocean conveyor belt and the coriolis effect can be very difficult to understand. Using different strategies to help students understand these concepts. - Inquiry - Using case studies to understand the impacts of unequal distribution of water. 	<ul style="list-style-type: none"> • The hydrological cycle is a system of water flows and storages that may be disrupted by human activity. • The ocean circulatory system (ocean conveyor belt) influences the climate and global distribution of water (matter and energy) • The supplies of freshwater resources are inequitably available and unevenly distributed, which can lead to conflict and concerns over water security. • Freshwater resources can be sustainably managed using a variety of different approaches. • Aquatic systems provide a source of food production. • Unsustainable use of aquatic ecosystems can lead to environmental degradation and collapse of wild fisheries. • Aquaculture provides potential for increased food production. 	<ul style="list-style-type: none"> - The hydrological cycle is represented as a systems model; to what extent can systems diagrams effectively model reality, given that they are only based on limited observable features? - Aid agencies often use emotive advertisements around water security issues; to what extent can emotion be used to manipulate knowledge and actions? - The Inuit people have an historical tradition of whaling; to what extent does our culture determine or shape our ethical judgements? - A wide range of parameters are used to test the quality of water and judgements are made about the causes and effects of water quality; how can we effectively identify cause-effect relationships, given that we can only ever observe correlation? 	Quizzes Tests HW on the water cycle
12	5 weeks	Topic 5: Soil Systems and terrestrial food production systems and societies	<ul style="list-style-type: none"> - Thinking: students must evaluate many decisions and strategies that humans have created to produce enough food for humans. - Social: Students will need to work together to learn about the properties of soil. 	<ul style="list-style-type: none"> • The soil system is a dynamic ecosystem that has inputs, storages, and flows. • The quality of soil influences the primary productivity of an area. • The sustainability of terrestrial food production systems is influenced by socio-political, economic, and ecological factors. • Consumers have a role to play through their support of different terrestrial food production systems. • The supply of food is inequitably available and land suitable for food production is unevenly distributed 	<ul style="list-style-type: none"> - The soil system may be represented by a soil profile; since a model is, strictly speaking, not real, how can it lead to knowledge? - Consumer behavior plays an important role in food production systems; are there general laws that can describe human behavior? - Our understanding of soil conservation has progressed in recent years; 	Lab on soil Quiz Tests Final review for May exam

				<p>among societies, and this can lead to conflict and concerns.</p> <ul style="list-style-type: none"> • Fertile soils require significant time to develop through the process of succession. • Human activities may reduce soil fertility and increase soil erosion. • Soil conservation strategies exist and may be used to preserve soil fertility and reduce soil erosion. 	<p>what constitutes progress in different areas of knowledge?</p> <ul style="list-style-type: none"> - Fertile soil can be considered as a non-renewable resource because once depleted, it can take significant time to restore the fertility; how does our perception of time influence our understanding of change? - The circular economy can be seen as a paradigm shift; does knowledge develop through paradigm shifts in all areas of knowledge? 	
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