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***Course Overview***

In Design Technology pupils combine practical and technological skills with creative thinking to design and make products and systems that meet human needs. They learn to use current technologies, like CAD/CAM, and consider the impact of future technological developments on a social and environmental level. They learn to think creatively while developing real world skills in problem solving, project planning, communication, and time management.

Design Technology is an ideal choice for those students interested in a future design related education or career, whether it be industrial, product, fashion, architecture, automotive or graphic design, as well as any engineering or manufacturing industries. With obvious links to Science and Arts, it also has strong connections with Business Management as a lot of the theoretical knowledge taught examines modern manufacturing and business strategies used in modern industry. The subject is dynamic and forward thinking that prepares our students with a wide range of skills, useful in any future education or career.

***Learning Outcomes***

The aimsenable students, through the overarching theme of the nature of design, to develop:

* a sense of curiosity as they acquire the skills necessary for independent and lifelong learning and action through inquiry into the technological world around them
* an ability to explore concepts, ideas and issues with personal, local and global significance to acquire in-depth knowledge and understanding of design and technology
* initiative in applying thinking skills critically and creatively to identify and resolve complex social and technological problems through reasoned ethical decision-making
* an ability to understand and express ideas confidently and creatively using a variety of communication techniques through collaboration with others
* a propensity to act with integrity and honesty, and take responsibility for their own actions in designing technological solutions to problems
* an understanding and appreciation of cultures in terms of global technological development, seeking and evaluating a range of perspectives
* a willingness to approach unfamiliar situations in an informed manner and explore new roles, ideas and strategies so they can articulate and defend their proposals with confidence
* an understanding of the contribution of design and technology to the promotion of intellectual, physical and emotional balance and the achievement of personal and social well-being
* empathy, compassion and respect for the needs and feelings of others in order to make a positive difference to the lives of others and to the environment
* skills that enable them to reflect on the impacts of design and technology on society and the environment in order to develop their own learning and enhance solutions to technological problems.

***Unit Overviews***

*Unit 1 –* **CAD/CAM – Concept Jewelry Design**

***Approximate Length****:* **6-8 Weeks (Sept-Oct Year DP1)**

**Unit description:** This unit focuses on Students will begin the year developing CAD/CAM skills in both 2D and 3D software to design and develop a conceptual piece of jewelry using 3D printing and/or laser cutting technology. This is the first unit of the IB Diploma Design Technology course so focused on developing Key Conceptual understanding of communication skills using both graphical communication and CAD skills. Students will also develop some researching skills in gathering/collating information, specifically anthropometrics which will help inform and dictate the design of their product – a conceptual jewelry design that will be 3D printed. During this unit the students will also be introduced to theoretical topics 3: Modelling and Topic 1 Human Factors, which link to the project undertaken. Students will be assessed on a monthly basis and assessed on their completed coursework. Key focus of this unit is to get students developing organizational skills and develop creative processes and methods to generate and develop ideas.

*Unit 2 –* **Light Project**

***Approximate Length:* 14-16 Weeks (Nov-Feb DP1)**

**Unit description:** The students will develop a product based on the theme of “light”, by identifying a need for a specific user group and location. This project will give the students a deeper understanding of the assessment criteria for the major design project and help in developing key problem solving skills required in Design. Students will begin to develop a greater range of manufacturing skills using a wider range of equipment and processes. Simultaneously students will gather key theoretical knowledge in Topic 4, 2 and 5 of the Core Topics. Again these topics will help the students in the development of their projects gain vital knowledge for IB exams and Internal coursework

*Unit 3 –* **Major Design Project**

***Approximate Length****:* **28-30 Weeks ( March DP1 – Feb DP2)**

**Unit description:** Students will individually identify a real existing design problem and research, develop a solution to the chosen design problem for a specific target market. Students choose their own project in consultation with the teacher. Students will develop and in-depth project over nearly a full year of research and design. This project is sent to the B and worth 40% of the grade so students must be organized and working consistently to reach the higher grades. About half the lessons will be for students to work independently on this project while the other lessons are focused on remaining theoretical aspects of the course. Students will have completed most Core Topic Theory by this stage so mostly focusing on HL Topics in grade 12 with HL Students during this time. SL students will also be returning to aspects of core theory to recap, and being tested on a monthly basis. Students will be assessed on theoretical aspects through in class tests and IA requirements simultaneously during this time. Guidance and deadlines will be posted on managebac.

***Assessment***

Students will be evaluated using formative and summative assessments. The purpose of formative assessments and homework is to prepare students for summative assessments. Formative assessments will take many forms with the goal of scaffolding the knowledge, skills and the critical thinking required to successfully complete summative assessments. All summative assessments will be graded on the 1-7 IB scale. All reports will reflect the IB 1-7 grading scale and will be based the best-fit approach to assessment.

Grade Boundaries for each summative will be published to students by the teacher after the summative assessments are graded.

The Internal Assessment [IA] component, known as the Individual Design Project, is completed between April of Grade 11 and February

of Grade 12, and is worth 40% of the overall assessment. At the beginning of grade 11 students will undertake a series of focused tasks

and a initial mini-design project to develop and build on the necessary skills for this internal assessment. All Grade 12 (at the end of

the two year course) will write the IBO external examinations in May. The results of these examinations will be released in July 2016

and are based on external examinations and internal practical assessment supported by the teacher throughout the course. Below is

a break-down of the external exams which are worth 60% of the total grades.

***IB Component Breakdown***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Component ( SL)** | **Overall %** | **Component ( HL)** | **Overall %** | **Format** |
| Paper 1 | 30 | Paper 1 | 20 | Multiple choice Paper. SL-3/4 Hour – 30 Questions – Core Units 1-6HL- 1 Hour 40 Questions – Core and HL Extension  |
| Paper 2 | 30 | Paper 2 | 20 | 11/2 Hours (50 Marks)Paper is common with SL and HL. All based on Core Units**Section A:** one data-based question and several short-answer questions on the core material (all compulsory). Maximum of 30 marks.  **Section B:** one extended-response question on the core material (from a choice of three). Maximum of 20 marks. |
| Paper 3 | n/a | Paper 3 | 20 | 11/2 Hours (40 Marks) HL only.**Section A:** two structured questions on the HL extension material, both compulsory and each worth a  maximum of 10 marks.  **Section B:** one structured question on the HL extension material based on a case study. Maximum of 20 marks. |
| Design Project | 40 | Design Project | 40 | At SL, the Design Project is assessed against the 4 common criteria: Criterion A: Analysis of a design opportunity (9 Marks)Criterion B: Conceptual design (9 Marks) Criterion C: Development of a detailed design (9 Marks) Criterion D: Testing and evaluation (9 Marks) At HL, the Design Project is assessed against the 4 common criteria above and 2 HL additional only criteria:  Criterion E: Commercial production (9 Marks) Criterion F: Marketing strategies (9 Marks) |

***Group 4 Project***

There is a compulsory Group 4 project where all students studying science will work together collaboratively. All DP Chemistry students must participate in this collaborative project as part of the syllabus. Participation at GWA consists of learning the Experimental Sciences from new perspectives in a real-life setting. The theme is ‘Theme Park Science’ and an off campus trip will happen during October of Grade 11.

The Group 4 Project is assessed internally by a Digital Story Submission by each group in November.

 ***Course Grade Descriptors***

While we will look carefully at the grades students have achieved on the various assessments, ultimately, quarterly grades as well as predicted grades will be based on the following grade descriptors

**Grade 7**

Displays comprehensive knowledge of factual information in the syllabus and a thorough command of concepts and principles. Selects and applies relevant information, concepts and principles in a wide variety of contexts. Analyses and evaluates quantitative and/or qualitative data thoroughly. Constructs detailed explanations of complex phenomena and makes appropriate predictions. Solves most quantitative and/or qualitative problems proficiently. Communicates logically and concisely using appropriate terminology and conventions. Shows insight or originality. Demonstrates personal skills, perseverance and responsibility in a wide variety of investigative activities in a very consistent manner. Works very well within a team and approaches investigations in an ethical manner, paying full attention to environmental impact. Displays competence in a wide range of investigative techniques, pays considerable attention to safety, and is fully capable of working independently.

**Grade 6**

Displays very broad knowledge of factual information in the syllabus and a thorough understanding of concepts and principles. Selects and applies relevant information, concepts and principles in most contexts. Analyses and evaluates quantitative and/or qualitative data with a high level of competence. Constructs explanations of complex phenomena and makes appropriate predictions. Solves basic or familiar problems and most new or difficult quantitative and/or qualitative problems. Communicates effectively using appropriate terminology and conventions. Shows occasional insight or originality. Demonstrates personal skills, perseverance and responsibility in a wide variety of investigative activities in a very consistent manner. Works well within a team and approaches investigations in an ethical manner, paying due attention to environmental impact. Displays competence in a wide range of investigative techniques, pays due attention to safety and is generally capable of working independently.

**Grade 5**

Displays broad knowledge of factual information in the syllabus. Shows sound understanding of most concepts and principles and applies them in some contexts. Analyses and evaluates quantitative and/or qualitative data competently. Constructs explanations of simple phenomena. Solves most basic or familiar problems and some new or difficult quantitative and/or qualitative problems. Communicates clearly with little or no irrelevant material. Demonstrates personal skills, perseverance and responsibility in a variety of investigative activities in a fairly consistent manner. Generally works well within a team and approaches investigations in an ethical manner, paying attention to environmental impact. Displays competence in a range of investigative techniques, pays attention to safety and is sometimes capable of working independently.

**Grade 4**

Displays reasonable knowledge of factual information in the syllabus, though possibly with some gaps. Shows adequate comprehension of most basic concepts and principles but with limited ability to apply them. Demonstrates some analysis or evaluation of quantitative or qualitative data. Solves some basic or routine problems but shows limited ability to deal with new or difficult situations. Communicates adequately although responses may lack clarity and include some repetitive or irrelevant material. Demonstrates personal skills, perseverance and responsibility in a variety of investigative activities, although displays some inconsistency. Works within a team and generally approaches investigations in an ethical manner, with some attention to environmental impact. Displays competence in a range of investigative techniques, pays some attention to safety although requires some close supervision.

**Grade 3**

Displays limited knowledge of factual information in the syllabus. Shows a partial comprehension of basic concepts and principles and a weak ability to apply them. Shows some ability to manipulate data and solve basic or routine problems. Communicates with a possible lack of clarity and uses some repetitive or irrelevant material. Demonstrates personal skills, perseverance and responsibility in some investigative activities in an inconsistent manner. Works within a team and sometimes approaches investigations in an ethical manner, with some attention to environmental impact. Displays competence in some investigative techniques, occasionally pays attention to safety, and requires close supervision.

**Grade 2**

Displays little recall of factual information in the syllabus. Shows weak comprehension of basic concepts and principles with little evidence of application. Exhibits minimal ability to manipulate data and little or no ability to solve problems. Offers responses which are often incomplete or irrelevant. Rarely demonstrates personal skills, perseverance or responsibility in investigative activities. Works within a team occasionally but makes little or no contribution. Occasionally approaches investigations in an ethical manner, but shows very little awareness of the environmental impact. Displays competence in a very limited range of investigative techniques, showing little awareness of safety factors and needing continual and close supervision.

**Grade 1** Recalls fragments of factual information in the syllabus and shows very little understanding of any concepts or principles.

Rarely demonstrates personal skills, perseverance or responsibility in investigative activities. Does not work within a team. Rarely approaches investigations in an ethical manner, or shows an awareness of the environmental impact. Displays very little competence in investigative techniques, generally pays no attention to safety and requires constant supervision.

***Student Responsibilities***

***Academic Honesty***

As the IB (2009) notes, “The candidates are responsible for ensuring that the final version of any work is authentic. Candidates themselves must bear the consequences if they submit any work for assessment that is not their own, regardless of whether the plagiarism was deliberate or the result of poor research skills. The same principle applies to collusion.”

The IB (2009) defines malpractice in the following ways:

* plagiarism: this is defined as the representation of the *ideas or work* of another person as the candidate’s own. Students can avoid plagiarism by properly acknowledging both direct quotes, images, etc. as well as the ideas of others.
* collusion: this is defined as supporting malpractice by another student, as in allowing one’s work to be copied or submitted for assessment by another
* duplication of work: this is defined as the presentation of the same work for different assessment components and/or diploma requirements
* any other behaviour that gains an unfair advantage for a student or that affects the results of another candidate (for example, taking unauthorized material into an examination room, misconduct during an examination, falsifying a CAS record).

**Protocol For In-School Academic Malpractice**

The following steps will be followed in cases of malpractice:

1. Teachers will advise students of suspicion of misconduct
2. A record of the incident will be forwarded to the Diploma Programme Coordinator
3. The Diploma Programme Coordinator will discuss the incident with the teacher
4. The Diploma Programme Coordinator will interview the student involved
5. The Diploma Programme Coordinator will action appropriate disciplinary measures commensurate to the offense making note of the incident in the SIS which will in turn prompt a communication with parents.

**Malpractice on Assessments to be Submitted to the IB**

According to the Academic Honesty (2009) document, in cases of malpractice on assessments or exam that are intended for submission to the IB, the following protocol has been put in place.

Once a candidate has submitted his or her work to a teacher (or the coordinator) for external or internal assessment together with the coversheet signed (or authenticated electronically) to the effect that it is the final version of the work, neither the work nor the coversheet can be retracted by the candidate. If the candidate is subsequently suspected of plagiarism or collusion, it is no defense to claim that the incorrect version of the work was submitted for assessment.

After a candidate has signed and dated the coversheet (or authenticated electronically)to the effect that his or her work is authentic and constitutes the final version of that work, the candidate’s teacher (or supervisor in the case of an extended essay) must also sign and date the coversheet to the effect that to the best of his or her knowledge it is the authentic work of the candidate. Any suspicion of malpractice that arises after the candidate has signed the coversheet must be reported to the coordinator help desk at IB Cardiff for investigation. However, if there is no tangible evidence of malpractice (such as the source of plagiarism) the candidate must be given the benefit of any doubt and the coversheet must be signed by the teacher/supervisor. It is not acceptable for the teacher to:

* delete the declaration and then sign the coversheet
* submit the work for assessment without his or her signature
* sign the declaration and then write comments on the work or coversheet that raise doubts about the work’s authenticity.
* In the above circumstances the IB will not accept the work for assessment (or moderation) unless confirmation is received from the school that the candidate’s work is authentic.

If a teacher is unwilling to sign a coversheet owing to a suspicion of malpractice, the matter must be resolved within the school. The coordinator has the option of informing the coordinator help desk that the work will not be submitted on behalf of the candidate (resulting in no grade being awarded for the subject or diploma requirement).

**Malpractice in Testing Situations:**

Students may not:

* take unauthorized material into an examination room (see below)
* leave and/or access unauthorized material in a bathroom/restroom that may be visited during a test
* pass on information to another student about the content of an examination, this includes facilitating the exchange information between other students in any way
* steal examination papers
* using an unauthorized calculator during an examination

Students must not have unauthorized material (for example, own rough paper, notes, a mobile/cell phone or an electronic device other than a permitted calculator) in their possession during a testing situation. “In their possession” may be taken to mean on the person of the student, in the student’s immediate proximity (such as on the floor or desk) or placed somewhere (such as a bathroom/restroom) for access during the test. It is very important to note that guilt will be confirmed by the school administration regardless of whether this material is used, was or was not intended for use or contains information relevant or potentially relevant to the test. The actual possession of unauthorized material constitutes malpractice; the school administration is not required to establish whether the student used or intended to use the material. No leniency is shown to a candidate who claims that they were unaware the material was in their possession.

The full GWA DP/CP Academic Honesty Policy is located [here](https://docs.google.com/a/ood.gemsedu.com/document/d/14_D19IoHchA5BTatQwOepeLB5ZDX4AnWHxNOqdAz_5A/edit?usp=sharing).

***Late Assessment Policy***

Late Assessments:

Should a student not complete a summative assessment on time (this includes summative drafts) teachers will:

● Speak with the student to find out why the assessment has not been submitted.

● An email home will be sent to parents detailing the missed assessment and the student will be asked to stay in school until it is completed.

● If the assessment is pending, once received, they log the infraction in the “reward and conduct” tab in iSAMS regarding the tardiness of the assessment.

o Note: in the case of pending assessments, any arrangements with students will not exceed 24 hours.

● If a student does not attend after school to work on the assessment, the teacher will confer with the student and, if necessary, refer the incident to the Grade Leader. The Grade Leader will discuss the situation with the student to see if support is required or consequences need to be imposed. The Grade Leader will subsequently record the incident in iSAMS. Further incidents of truancy will be escalated to the Secondary School Administration.

● If there is a second incident of a late submission of an assessment, the teacher will report it in an email to the Grade Leader who may contact parents for a meeting where you may be included. The Grade Leader will record their actions in iSAMS.

● Further incidents of late assessments will be reported to Grade Leaders who will forward the incident(s) to the Secondary School administration who, if warranted, will initiate an in-school suspension where students will complete the assessment until it is completed to standard. A record of the suspension will be recorded in iSAMS and prompt a communication with parents.

● Any subsequent incidents of late assessments will necessitate a parent meeting with a member of the Secondary School Administration to determine the best way forward.

Tests Absenteeism

● In cases where students are not in school on a test day, a communication from parents will be required.

● The student will need to present their teacher with a doctor’s note upon their return to class if the test is to be administred with no consequence.

● Should an authorized absence not be received, the student may not be permitted to write the test and an “NA” representing an “incomplete” will appear on the next quarterly report.

● If this incident reoccurs, the issue will be escalated to the Head of Senior School and will receive a ‘O’.

● Aside from school activities, all test absences will be recorded in iSAMS by the teacher with a note in the “record description” whether the test absence was authorized or not. The Grade Level Leader may follow-up with the student, if necessary.

***Teacher Assessment Commitments***

***All teachers will:***

● Provide feedback on all formative assessments within one calendar week of receipt.

● Post on Managebac (shaded in purple) any formative assessment (including homework) no later than 5:00PM the day it is assigned. If the formative assessment is not posted by this time there is no expectation that the assessment will be completed for the next day.

● Discuss with students prior to posting summative assessments and provide at least one calendar week lead time for students to prepare. Summative assessments will be posted on Managebac at least one week in advance of the due date (shaded in blue).

● Work collaboratively with their teacher colleagues and coordinator to work toward the goal of students having no more than two (2) summative assessments on a given day.

● Return summative assessments to students with feedback no later than three calendar weeks after the due date.

● Update Managebac immediately upon completion of marking/feedback.

● Communicate, in a timely fashion, with colleagues and administration about students who are turning in late formative and summative tasks in order to implement late assessment procedures, as outlined in the Assessment Policy. Late assessment procedures are outlined below.

● Communicate with parents when assignments/assessments are not turned in on the due date and clearly articulate the next steps for the student.