



BACHELORS DEGREE ASSIGNMENT SPECIFICATION

Student name:		Student P number:	
Programme:	Cert HE STEM		
Module:	Manufacturing and Materials	Module Level (4, 5, 6):	0
Module code:	M4X01511	Contribution to Overall Module Assessment (%):	50
Lecturer:	Andrew Tibbott	Internal Verifier:	Dr G Owen
Assignment Title:	Marina Kleaner development	Assignment No (x of x):	2 of 2
Hand Out Date:	07/03/2019	Submission deadline:	29/04/2019

Referencing:	In the main body of your submission you must give credit to authors on whose research your work is based. Append to your submission a reference list that indicates the books, articles, etc. that you have read or quoted in order to complete this assignment (e.g. for books: surname of author and initials, year of publication, <u>title of book</u> , edition, publisher: place of publication).		
Disclosure:	I declare that this assignment is all my own work and that I have acknowledged all materials used from the published or unpublished works of other people. All references have been duly cited.		
Student's Signature:	Assignments will not be accepted without a signature here	Date:	
Turnitin: Lecturer to tick to indicate if an electronic version of the assignment must be submitted to Turnitin. Note: the Turnitin version is the primary submission and acts as a receipt for the student. Penalties for late submission: Up to four weeks late, maximum mark of 40%. Over four weeks late, Refer. Only Year Tutors and the Programme Director may grant an extension.			YES
			NO

Learning Outcomes tested (from module syllabus)	Assessment Criteria To achieve each outcome a student must demonstrate the ability to:
Demonstrate an understanding of material properties and selection.	Comparison of possible materials for the production of an autonomous watercraft. Using sound academic research to choose the most suitable giving clear reasons for the choice.
Demonstrate an understanding of manufacturing processes and selection.	Comparison of possible production methods using the chosen material Using sound academic research to choose the most suitable for each development stage, giving clear reasons for the choice

- DO NOT put this form into Turnitin or it will match many similarities with other students' submissions.

TASK DESCRIPTION

This task requires you to compare differing materials and manufacturing methods that could be used to produce the autonomous watercraft.

GUIDANCE FOR STUDENTS IN THE COMPLETION OF TASKS

Research suitable materials and associated manufacturing methods for the autonomous watercraft detailed below.

Over the past 6 months UWTSD has been working on a collaborative project with local schools and colleges to conceptualise a solution the growing problem of single use plastics entering the marine environment. The concept that has been presented to us is that of a twin hulled catamaran with a conveyor system to remove plastic deposits from the water, similar to the picture below.



The product is an autonomous system designed at a scale that allows local smaller waterways, docks and marinas to be cleaned overnight causing minimal disruption to normal shipping activities.

UWTSD is very keen to develop the idea further and to investigate the commercialisation of this product.

The dimensions of the unit are 1200(l) x 600(w) x 600mm(h). The hull design is that of a standard catamaran.

UWTSD now required a detailed analysis of the options for volume production of the hulls to be used in the catamaran. **Each unit requires two identical hulls.**

You are required to produce a technical report comparing material choices and hull production methods across the entire product development cycle. This has been broken down into three stages on the next page.

Task 1.

Research possible materials and production methods for a 1:2 scale marketing prototype. You should include a clear comparison of several choices and detail why your chosen solution is the most suitable. This item is not intended for use in a marine environment, instead it will act as a visual representation of the design at trade presentations and shows. This item is to be produced in a quantity of 3 and needs to be produced with a one week lead time. Your material choice and production method should reflect this low volume quick turnaround (400 words / 20 marks)

Task 2

Research possible materials and production methods for a number of full scale trial units. You should include a clear comparison of several choices and detail why your chosen solution is the most suitable. This item is intended for full time use in a marine environment, the trial units will be deployed in the local area over a period of one year. This will allow for regular analysis of the suitability, efficacy and reliability of the design. These prototypes are to be produced in a quantity of 50 and needs to be produced with a one-month lead time. Your material choice and production method should reflect the intended use of the product along with consideration of timescales and cost effectiveness. (800 words / 40 marks)

Task 3

Research possible materials and production methods for a full production run. You should include a clear comparison of several choices and detail why your chosen solution is the most suitable. This item is intended for full time use in a marine environment, these items will be going to market worldwide and projections show that as many as 10,000 may be sold in the first year of production. This initial production will be required early in the launch period as the project will be mainly crowd funded and each backer will expect delivery at the outset. As such you should investigate materials and production methods suitable for batch manufacture over a period of 8-10 weeks. (800 words / 40 marks)

(Your research should include reference to material properties, product lifecycle and end of life considerations, environmental factors and costs for the material and production methods being considered.)

STRUCTURAL SECTION MARKING CRITERIA AND STUDENT FEEDBACK

This section details the assessment criteria. The *extent* to which these are demonstrated by you determines your mark. The marks available for each criterion are shown. Lecturers will use the space provided to comment on the achievement of the task(s), including those areas in which you have performed well and areas that would benefit from development/improvement.

Common Assessment Criteria Applied	Marks available	Marks awarded
1. Research-informed Literature Extent of research and/or own reading, selection of credible sources, application of appropriate referencing conventions.		
	30	
2. Knowledge and Understanding of Subject Extent of knowledge and understanding of concepts and underlying principles associated with the discipline.		
	30	
3. Analysis Analysis, evaluation and synthesis; logic, argument and judgement; analytical reflection; organisation of ideas and evidence		
	15	
4. Practical Application and Deployment Deployment of methods, materials, tools and techniques; application of concepts; formulation of innovative and creative solutions to solve problems.		
	15	
5. Skills for Professional Practice Attributes in professional practice: individual and collaborative working; deployment of appropriate media; presentation and organisation.		
	10	

Assignment Mark Overall (Assessment marks are subject to ratification at the Exam Board. These comments and marks are to give feedback on module work and are for guidance only until they are confirmed.)	Late Submission Penalties (tick if appropriate)		%
	Up to one-week late		
	Over one week late		

Student Self Evaluation Form

Student name:		Student P number:	
Programme:		Year of programme	
Assignment Title:			

This section repeats in brief the common assessment criteria detailed on previous pages. The *extent* to which these are demonstrated by you determines your mark. Using these criteria, tick the box that best indicates the level of achievement you feel you have achieved with regard to each of them.

Common Assessment Criteria Applied	Level of Achievement						
	REFER		3 rd	2:2	2:1	1 st	1 st
	OUTRIGHT FAIL	UNSATISFACTORY	SATISFACTORY	GOOD	VERY GOOD	EXCELLENT	EXCEPTIONAL
1. Question Paper	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☐
2. Apparatus and Method	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☐
3. Results and Analysis	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☐
4. Practical Application and Deployment	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☐

PLEASE COMMENT ON AREAS IN WHICH YOU FEEL THAT YOU HAVE PERFORMED WELL	PLEASE COMMENT ON AREAS YOU FEEL THAT YOU NEED TO DEVELOP

Student's Name		Date	
Student's Signature			