

Open Systems and Advanced Manufacturing Technologies

Unit 4 – The Development and Deployment of Unmanned Vehicles (UV):

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Coursework evidence folder

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Contents

[*SECTION 1 – Candidates should be able to show an appreciation of the development of UV over time. 4*](#_Toc524038282)

[*Coursework Evidence 1.1 4*](#_Toc524038283)

[*SECTION 2 – Candidates should be able to show the most widely used areas of UV usage. Candidates should be able to show they understand the most current state of the market for UVs. Candidates should be able to describe in some detail some specific uses 5*](#_Toc524038284)

[*Coursework Evidence 1.2, 1.3 5*](#_Toc524038285)

[*Coursework Evidence 1.4 6*](#_Toc524038286)

[*SECTION 3 – Candidates should be able to show some of the designs currently available. Candidates should be able to show they understand the relationship between design and purpose. 7*](#_Toc524038287)

[*Coursework Evidence 2.1, 2.2 7*](#_Toc524038288)

[*SECTION 4 – Candidates should be able to explore devices specifications and look for ways to improve them 7*](#_Toc524038289)

[*Coursework Evidence 2.3 7*](#_Toc524038290)

[*SECTION 5 – Candidates should be able to demonstrate a clear understanding of the range of characteristics of UVs. 8*](#_Toc524038291)

[*Coursework Evidence 2.4 8*](#_Toc524038292)

[*SECTION 6 – Candidates should be able to describe the control systems for UVs. 9*](#_Toc524038293)

[*Coursework Evidence 2.5 9*](#_Toc524038294)

[*SECTION 7 – Candidates should be able to show the methods of controlling various UVs. 9*](#_Toc524038295)

[*Coursework Evidence 3.1 9*](#_Toc524038296)

[*SECTION 8 – Candidates should be able to have an appreciation of some of the manufacturing constraints in their projects or the projects of others. 10*](#_Toc524038297)

[*Coursework Evidence 3.2 10*](#_Toc524038298)

[*SECTION 9 – Candidates should be able to describe what features aide endurance and reliability. 10*](#_Toc524038299)

[*Coursework Evidence 3.3 10*](#_Toc524038300)

[*SECTION 10 – Candidates should be able to show they understand the key aspects of UV by designing one with labels. Candidates should be able to describe their design’s features. 11*](#_Toc524038301)

[*Coursework Evidence 3.4, 35 11*](#_Toc524038302)

[*SECTION 11 – Candidates should be able to list a number of key legal issues and their main features in relation to UV. Candidates should be able to show they understand the need for regulation. 12*](#_Toc524038303)

[*Coursework Evidence 4.1, 4.2 12*](#_Toc524038304)

[*SECTION 12 – Candidates should be able to show they understand some of the ethical issues of UV usage. Candidates should be able to show they understand the main issue around the use of UV in the military. 13*](#_Toc524038305)

[*Coursework Evidence 4.3, 4.4 13*](#_Toc524038306)

Coursework Checklists

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Understand the history and range of uses of UVs | 2. Appreciate the design and development issues related to UVs | | | 3. Explore the problems and solutions of UV usage | | 4. Understand the legal, moral and ethical issues related to UV use | |
| **Section 1** – Timeline of UV development (1.1) |  | **Section 3** – Describe and assess design change of chosen UV area (2.1, 2.2) |  | **Section 7** – Describe control methods (3.1) |  | **Section 11** – Describe and assess legal issues, laws and regulations (4.1, 4.2) |  |
| **Section 2** – Mind map of UV uses, description of the use of UVs in civil and military situations (1.2, 1.3, 1.4) |  | **Section 4** – Main materials, strengths and weaknesses (2.3) |  | **Section 8** – Constraints (3.2) |  | **Section 12** – Review ethical and legal considerations in commercial and military (4.4, 4.5) |  |
|  |  | **Section 5** – Description of main forms (2.4) |  | **Section 9** – Description of endurance and reliability within a design (3.3) |  |  |  |
|  |  | **Section 6** – Description of hardware/software (2.5) |  | **Section 10** – Design of own UV and description of features (3.4) |  |  |  |
|  |  |  |  |  |  |  |  |

# SECTION 1 – Candidates should be able to show an appreciation of the development of UV over time.

## Coursework Evidence 1.1

Complete the timeline below with key developments of UVs

# SECTION 2 – Candidates should be able to show the most widely used areas of UV usage. Candidates should be able to show they understand the most current state of the market for UVs. Candidates should be able to describe in some detail some specific uses

## Coursework Evidence 1.2, 1.3

Use the mind map below to identify the many areas that use UVs and uses for UVs

## Coursework Evidence 1.4

Use the space below to describe how UVs are used, with examples, in civil and military situations

|  |
| --- |
| Civil uses of UVs |
|  |

|  |
| --- |
| Military uses of UVs |
|  |

# SECTION 3 – Candidates should be able to show some of the designs currently available. Candidates should be able to show they understand the relationship between design and purpose.

## Coursework Evidence 2.1, 2.2

Use the table below to look at the use for UVs; land, sea or air and the current designs of those UVs and describe how it is used, outlining the purpose and how you think it could be improved.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Design | Land, Sea or Air | DESCRIBE how the UV is used | What is the main purpose of the UV | How can it be improved? |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

# SECTION 4 – Candidates should be able to explore devices specifications and look for ways to improve them

## Coursework Evidence 2.3

Use the table below to look at the main materials used in UV creation and assess strengths and weaknesses

|  |  |  |  |
| --- | --- | --- | --- |
| Material | Material Use | Strengths | Weaknesses |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# SECTION 5 – Candidates should be able to demonstrate a clear understanding of the range of characteristics of UVs.

## Coursework Evidence 2.4

Use the table below to DESCRIBE the characteristics of the main forms of UVs

|  |  |
| --- | --- |
| Form of UV | Description of characteristics |
| UAV |  |
| ROV |  |
| UV |  |

# SECTION 6 – Candidates should be able to describe the control systems for UVs.

## Coursework Evidence 2.5

Use the space below to describe the different control systems available in the form of hardware and/or software.

# SECTION 7 – Candidates should be able to show the methods of controlling various UVs.

## Coursework Evidence 3.1

Use the space below to describe the control methods available to UVs

# SECTION 8 – Candidates should be able to have an appreciation of some of the manufacturing constraints in their projects or the projects of others.

## Coursework Evidence 3.2

Use the space below to look at development constraints that apply to building UVs

# SECTION 9 – Candidates should be able to describe what features aide endurance and reliability.

## Coursework Evidence 3.3

Use the space below to describe the key requirements of endurance and reliability of UVs

# SECTION 10 – Candidates should be able to show they understand the key aspects of UV by designing one with labels. Candidates should be able to describe their design’s features.

## Coursework Evidence 3.4, 35

Use the space below to show the design for your own UV concept and DESCRIBE the features you have envisioned

# SECTION 11 – Candidates should be able to list a number of key legal issues and their main features in relation to UV. Candidates should be able to show they understand the need for regulation.

## Coursework Evidence 4.1, 4.2

Use the space below to DESCRIBE the legal issues and assess the main laws and regulations that affect UV use

|  |
| --- |
| *What legal issues are there in relation to UVs* |
|  |

|  |  |  |  |
| --- | --- | --- | --- |
| *Law/Regulation* | *Outline* | *Good Points* | *Bad Points* |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# SECTION 12 – Candidates should be able to show they understand some of the ethical issues of UV usage. Candidates should be able to show they understand the main issue around the use of UV in the military.

## Coursework Evidence 4.3, 4.4

Use the space below to review the ethical concerns relating to UVs in a commercial and military setting.

|  |  |
| --- | --- |
| Commercial | Military |
|  |  |