VCE Systems Engineering

**Evaluation Criteria Development**

When developing and designing an Evaluation Criteria refer to your Design Brief;

* Look specifically at the needs, constraints and considerations.
* In these, find 10 areas that you would consider as high importance items.
* Rank these from highest to lowest in importance (1-10).
* For each of these areas you need to develop a question that explains the type of information you are trying to get. Yes/ no or very general question are not suitable for the evaluation criteria, they should be quite specific in what they are asking.
* Write a statement about the ‘importance’ of this area in developing a system solution.
* Think of strategies that will help to achieve the required outcome.
* Refer to the ‘Evaluation Criteria Matrix’ attached to help you.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Design Brief Area** | **Rank** | **Question** | **Importance** | **Achievement** |
| **1** |  |  |  |  |  |
| **2** |  |  |  |  |  |
| **3** |  |  |  |  |  |
| **4** |  |  |  |  |  |
| **5** |  |  |  |  |  |
| **6** |  |  |  |  |  |
| **7** |  |  |  |  |  |
| **8** |  |  |  |  |  |
| **9** |  |  |  |  |  |
| **10** |  |  |  |  |  |

VCE Systems Engineering

**Evaluation Criteria Matrix**

Refer to the factors (areas) that apply to your project and come up with your own criteria questions with help from the examples given. Each criterion requires a statement about its importance and strategies on how it may be achieved. Refer to your design brief for inspiration, too.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **FACTOR** | **DESCRIPTION** | **✓** | **CRITERION**  **EXAMPLES** | **IMPORTANCE EXAMPLES** | **ACHIEVEMENT**  **EXAMPLES** | **IMPORTANCE**  **RANKING** |
| Time/ Timeframe | The time available to develop, construct, test and deliver the system. |  | **Was time used effectively to meet the needs of the design brief?**  **Was the timeframe planned for enough time to complete an effective system?** | **The scale of the system and time allowed for completion will have an influence over the quality of the final system product.** | **Check that the system solution matches the level of complexity with the time available.**  **Ensure planning is well considered for a realistic and effective use of time.** |  |
| Budget | Money available or limits to complete the system. Allowance for budget overrun? Cost vs Quality. |  | **Was the budget a realistic amount to make the system?**  **Did the budget set effect the quality of the system made?** | **The budget needs to have some flexibility to allow for any cost overruns.**  **Budget limits will effect the quality of parts and components purchased for the system.** | **Time is needed to research parts and components thoroughly for current prices to gauge a realistic budget amount.** |  |
| Size | This could be specific dimensions to fit a particular space. This could be a maximum or minimum size limit. |  | **Is the system size within the tolerances set?**  **Is the final size suitable for the situation it will used in?** | **Size determines the location of the system, best operation and specific considerations.** | **Gaining correct measurements from the situation will be used to consider the mobility needs of the system.** |  |
| Shape | Could be dependent on purpose of system, such as aerodynamics, ergonomics or just visual appeal. |  | **Is the shape appropriate for the function and performance of the system?** | **The shape may affect function, drag and balance of the system** | **Determine setting it will be mostly used, for suitability. Look at moving points of the system and if drag and balance may be affected.** |  |
| Function | How the system should perform or needs to perform. Performance targets? |  | **Does the system meet the performance targets outlined?**  **Does the system function logically?** | **A system should be intuitive in the design of its function so that people can use it without the need for complex instructions** | **Have the end user in mind as well as the required/ expected performance of the system. Aim for simplicity on layout and operation.** |  |
| Features | What control functions should it have? What special things should it do? |  | **Are the control functions included suitable for the system?**  **Are the features specific to the performance needed?** |  |  |  |
| Safety | Are there regulations it must meet? What aspects need to be made safe on the system; sharp edges, exposed wiring, mechanical areas that could do damage? |  | **Are the key safety points addressed adequately?**  **Are safety features included in the operation of the system?** |  |  |  |
| Weight | Does the system have a weight requirement; weight for stability or light weight for performance?  Balanced weight for safety? |  | **Are the weight related requirements meet through materials selection and system design?** |  |  |  |
| Materials | What materials and the properties of the materials are needed. Strength, durability, light weight, workability, cost, availability? |  | **Were the materials selected for the system’s construction the right choice?** |  |  |  |
| Power source | How will the system be powered; mains power through an adapter, battery power, alternative energy or combination? |  | **Do the power requirements meet the needs of the system’s performance? Explain.** |  |  |  |
| Maintenance | Will the system require access points for maintenance – batteries, lights, etc? How much maintenance will the system require, what may need replacing? |  | **How will the system fair in regards to maintenance with parts longevity and ease of access?** |  |  |  |
| Durability | What force and motion types will the system be subject to? Does the durability relate to ridged or flexible strength? |  | **Does the system cope with the identified forces and motions applied to it?**  **Are the chosen materials suitable in terms of durability?** |  |  |  |
| Appearance | What is important; stylish and trendy, bright colours for safety/ visibility or dull colours to blend in with surroundings |  | **Is the appearance of the system fit for purpose?** |  |  |  |
| Environment | Where will it be used; indoor/ outdoor, hot/ cold, wet/ dry, harsh handling – vibration, knocks, movement, damage. Will sunlight, wind, rain affect it? |  | **Is the system effective in dealing with the environments it will be used in?** |  |  |  |
| Sustainability | Have you considered the materials used in regards to environmental concerns? Is the power source sustainable – rechargeable batteries, renewable power source? |  | **Are the materials and performance solutions considerate of sustainable practices?** |  |  |  |
| Housing | What is the purpose of the housing – weather proofing, security, visual appeal? Does it need a housing? |  | **Does the housing satisfy the conditions and purpose of the system?** |  |  |  |
| Complexity | How complex is the system – subsystems, connections, programming, function, etc? |  | **Is the system logical and reasonable for end users to operate?** |  |  |  |
| Accuracy | What level of performance accuracy does it need? High precision or near enough? |  | **Is the level of system accuracy enough for responsive performance?** |  |  |  |
| Client/ end user needs | What specific client and end user needs need to be taken into consideration; age, gender, education, safety, location, environment, preferences, operation, targets, etc. |  | **How have specific client and end user needs been met in the system solution?** |  |  |  |