WMG
DESIGN CHALLENGE

CyberWomen @Warwick

CYBERWOMEN GROUPS C.I.C.

WFR
WARWICK FIGHTING ROBOTS

WMG
THE UNIVERSITY OF WARWICK

WARWICK RACING

WarwickSub
HUMAN POWERED SUBMARINE

WARWICK RAIL

CATAPULT
High Value Manufacturing

WMG DESIGN CHALLENGE

Welcome to the WMG Design Challenge, this is a competition aimed at state-funded secondary schools.

Any age group across KS3, KS4 and KS5 may enter. Some design briefs have suggested levels of complexity and age audience.

The design briefs have been developed by the Student Project Teams here at WMG at the University of Warwick; CyberWomen@Warwick, Warwick Moto, Warwick Fighting Robots, Warwick Racing, Warwick Rail and Warwick Submarine.

This challenge can be run within lessons, as part of Design & Technology, Computer Science or as part of an extra-curricular STEM club, the choice is yours. Please find more details in this guidance pack.

WMG DESIGN CHALLENGE – THE IMPORTANT BITS

Timeline:
- Challenge launched: February half term
- Deadline for Submissions: 24th May 2024
- Finalist Day: TBC (possibly w/c 10/06/24)

Entry Requirements:

It is suggested that pupils work in teams of no more than 6, submitting only one idea.

All entries must be submitted by a teacher.

Submission details:

Submit 2 A3 design sheets as JPEGs or PDFs. Maximum file size 10MB.

These MUST be clearly labelled with your school's name and the pupils team name and clearly state which design brief they're entering

Any queries email: wmgoutreach@warwick.ac.uk

How to Submit:
1. Complete the teacher form: Teacher Submission Form
2. Ask your pupils to complete the student form: Pupil Form
3. Email: wmgoutreach@warwick.ac.uk your submission, the subject heading should be: 'school name' WMG Design Challenge

WMG DESIGN CHALLENGE – THE STUDENT PROJECTS

University of Warwick students lead and collaborate on engineering projects as part of a module with the School of Engineering.

They are supported by WMG, the High Value Manufacturing Catapult and Industry Partners to design and build engineering projects.

The CyberWomen@Warwick are part of the CyberWomen groups that together, are forming a community of women in UK Universities, studying cyber-based subjects, to come together and empower women in this field. Their imitative is stand-alone: entirely student-led, with the simple mission: Creating a community that inspires learning, networking, and positive change.

The WMG Outreach Team also support the students in delivering outreach activities to inspire young audiences about careers in engineering.
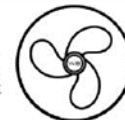
Cyber Security is important to everyone, **CyberWomen@Warwick** would like you to design a website / application that will train users on different areas of cyber security and how not to fall victim to various threats.

How do electric turbines work? Can you explore how you can create electricity?

Warwick Moto would like you design and build your own wind turbine, that can generate electricity. Explore components that create power. Could you design the best blades to turn it?

How important is the chassis of a racing car? What are the important factors to consider when designing a car to go fast? **Warwick racing** would like you to design a new chassis, and to further think about aerodynamics and ergonomics.

WMG DESIGN CHALLENGE – THE DESIGN BRIEFS

The train is out of control! **Warwick Rail** need you to design a control panel, with all important controls, to be able to drive the train safely. What does the driver need to know and be able to do?


What would win in a fight? **Warwick Fighting Robots** need you to design a weapon of choice for their fighting robot, for when it is in combat with other fighting robots.

Help **Warwick Submarine** win the race, they need your help to design a propulsion system that will get them moving quickly through water. What can you design to help them win the race?

More details about each Student Project Design Brief
can be found on the website: Student Projects (warwick.ac.uk)
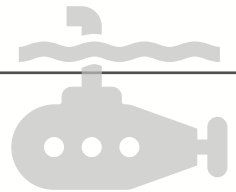
WMG DESIGN CHALLENGE – WHAT WILL THE JUDGES LOOK FOR?

DESIGN SHEETS

Ideas must be submitted on two A3 design sheets.

They should clearly show ideas, the problem and how they will solve the problem.

Show their creativity through a range of methods: sketches, models, photos, annotation, technical drawings, testing.

Their journey from research to final idea.

SKILLS & IDEAS

Pupils should show skills in how to research, using primary and secondary research.

They should show how to model, prototype or digitally mock up an idea.

They should test their ideas, or gather feedback on the idea, taking this into consideration.

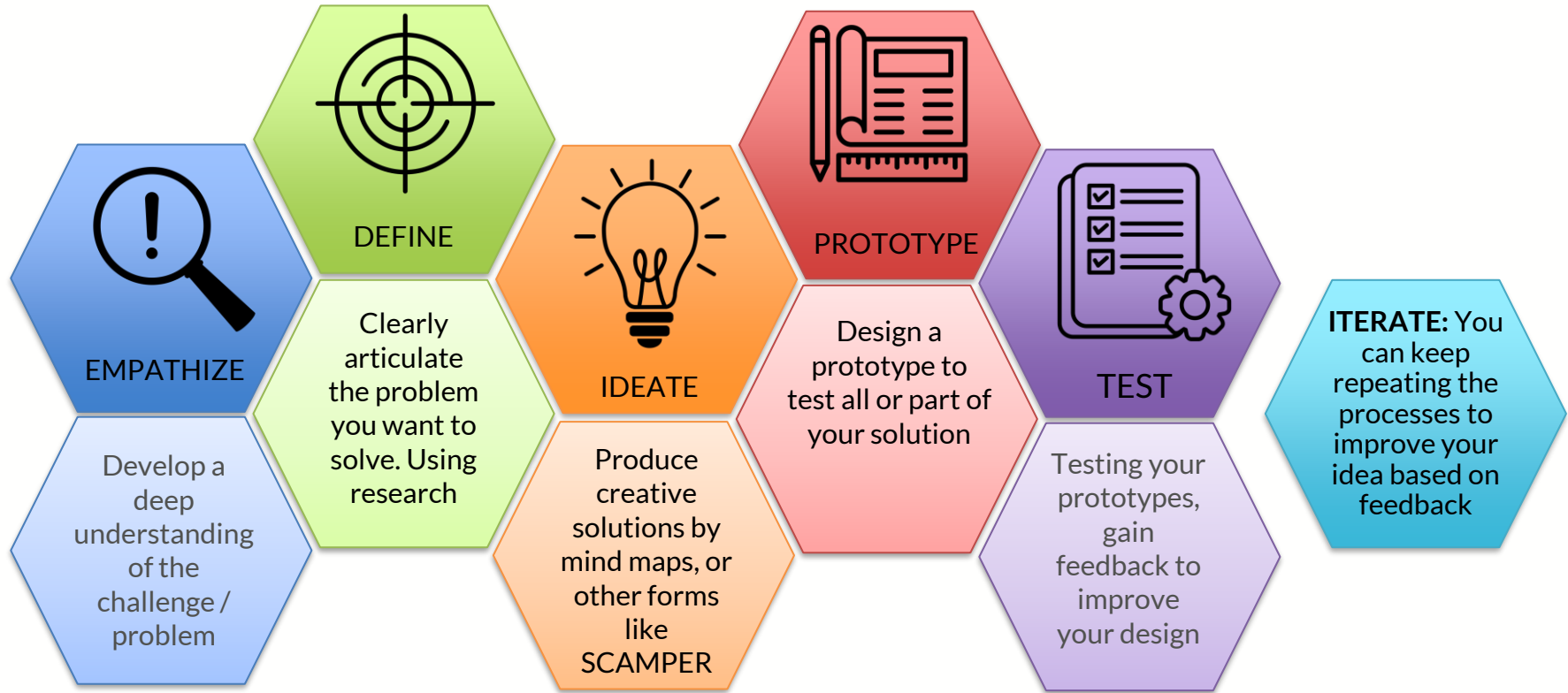They should work well as a team to complete the challenge.

Be innovative, developing a creative, exciting and original idea.

TIPS FROM THE STUDENT PROJECTS:

There is no right or wrong way for you to present your ideas, but make sure that they are clearly communicated, so that the judges can understand your thinking, what you are trying to communicate, is visually clear.

Make sure that you show how you meet the Design Brief, that you understand what is being asked, how you have researched and created initial ideas, through to a final idea, using feedback, evaluation and iteration.

WMG DESIGN CHALLENGE – THE DESIGN PROCESS

EMPATHIZE

Develop a deep understanding of the challenge / problem

DEFINE

Clearly articulate the problem you want to solve. Using research

IDEATE

Produce creative solutions by mind maps, or other forms like SCAMPER

PROTOTYPE

Design a prototype to test all or part of your solution

TEST

Testing your prototypes, gain feedback to improve your design

ITERATE: You can keep repeating the processes to improve your idea based on feedback

This WMG Design Challenge competition:

- Supports secondary school pupils to discover the opportunities open to them after school.
- Gives pupils an insight into 'What is Engineering' and that there are many areas of engineering on offer to inspiring engineers.
- Supports cross-curricular subjects including Design & Technology, Science, Computer Studies, Citizenship, Maths and English.
- Develops interdisciplinary problem-solving skills, creativity, critical thinking, collaboration and communication skills.
- Advocating the role of design and creativity, with emphasis on iterative design.