

# Time to Celebrate Engineering Challenge

“If you’re good at engineering, you’ll be good at baking. And if you’re good at baking you’ll be good at engineering,” says engineer and Great British Bake Off supremo Dr Rahul Mandal

Can you prove him right on National Engineering Day, 2 November 2022, by taking part in our Time to Celebrate Engineering challenge?

Three Great British Bake Off engineers, Rahul Mandal, Giuseppe Dell’Anno and Andrew Smyth, have created a [vegan chocolate cake recipe](#) to test your baking skills and engineering creativity.

Engineer the recipe from treat to tremendous by incorporating some [engineered elements](#). See our recipe below for a few suggestions! Share it on social media and it could just win you a prize.

[Ten prize packs](#) are available, featuring a manual 3D chocolate printer, aprons, and cookbooks signed by our baking engineers.

To find out [how to enter and competition details](#), please see the end of the recipe.

## **‘Time to celebrate engineering’ vegan cake recipe**

This is a vegan chocolate sandwich cake, filled with raspberry jam, topped with a generous layer of whipped white chocolate ganache, and decorated with a simple yet effective clock-inspired decoration. The vegan/plant-based elements can be swapped for non-vegan alternatives on a one for one basis.

The sponges are baked in two 20cm diameter tins, preferably spring form. No special equipment is needed apart from handheld electric whisks and a piping bag (if you have one).

Serves 8-10.

Recipe created by Rahul Mandal, Giuseppe Dell’Anno, and Andrew Smyth.



Image 1 - The 'Time to Celebrate Engineering' vegan chocolate cake. Dark chocolate is used to decorate the cake like a clock face.



Image 2 - A slice of the 'Time to Celebrate Engineering' vegan chocolate cake. The cake is frosted with white chocolate ganache and filled with raspberry jam.

# Ingredients

## For the sponges

- 350g plain flour
- 80g unsweetened cocoa powder
- 2 tsp bicarbonate of soda
- 450g soft dark brown sugar
- 50g ground oatmeal or rolled oats
- 1/2 tsp salt
- 475g soy milk
- 2 tbsp cider vinegar
- 190g sunflower oil, plus extra for greasing
- 2 tsp vanilla bean paste or vanilla extract

## For the ganache

- 300g vegan white chocolate, finely chopped
- 120g vegan/plant-based double cream
- 1 tsp vanilla bean paste or vanilla extract

## For the filling

- 150g raspberry jam

## For the decoration

- 60g vegan dark chocolate, finely chopped

# Method

## Make the sponges

1. Set the shelf in the middle of the oven and preheat it to 160°C fan. Grease two deep 20cm cake tins with oil and line them with baking paper.
2. If using rolled oats, grind them in a food processor with the pulse function until they resemble coarse, gritty sand. Sift flour, cocoa and bicarbonate of soda into a large mixing bowl. Add sugar, ground oatmeal, salt and mix well with a spoon until fully combined, making sure to break up any lumps of sugar or flour.
3. Add soy milk and cider vinegar to a measuring jug and let the mixture sit undisturbed for 5 minutes, then mix it and pour it into the dry ingredients. Add

the oil, the vanilla bean paste or extract and mix together using a balloon whisk or, better still, an electric whisk.

4. Divide the batter equally between the prepared cake tins and bake them immediately on the same shelf in the preheated oven for about 38-40 minutes, or until a skewer inserted into the centre of the cake comes out clean.
5. Once baked, take the sponges out of the oven and let them cool in the tin for 10 minutes, before turning them upside down onto a wire rack to cool completely.

### **Make the ganache**

1. While the sponges are cooling, add the white chocolate and the double cream to a large, microwave-safe mixing bowl. Microwave in 30 second bursts, mixing well with a spatula between bursts, until the chocolate is completely melted. The mixture might darken upon melting, but do not worry as it will change back to a lighter colour when whisked.
2. Mix in the vanilla bean paste, cover the bowl with a plate and let it cool until thickened and semi-set. You can chill the ganache in the fridge for about 30 minutes to speed up this process. Upon cooling, the oils in the mixture might separate, but this will not be a problem as they will be incorporated back into the mixture at the next step.
3. Whisk the thickened ganache using an electric whisk for a few minutes until frothy, light in colour and creamy. Transfer the whipped ganache to a piping bag with a 1cm hole (no nozzle required) and set aside for later (do not store it in the fridge or it will get too stiff to be piped).

If you don't have a piping bag the chocolate ganache can simply be spooned onto the cake and spread with the back of the spoon, a knife or a spatula.

### **Make the decoration**

1. Prepare the chocolate decoration template by drawing the numbers 3, 6, 9 and 12 on a piece of paper. Also draw two clock hands, one 5cm long, one 8cm long. Secure the paper to the worktop with adhesive tape, then cover it with a sheet of baking paper and secure this with adhesive tape too.
2. Place about two thirds of the dark chocolate in a microwave-safe bowl and microwave it in 10 second bursts, mixing well between bursts, until completely melted. Add the remaining chocolate to the bowl and keep mixing it until this is completely melted too.

3. Transfer the melted chocolate to a small piping bag with a number 2 nozzle and pipe it onto the baking paper, following the numbers and hands that you should be able to see through the paper. Let the chocolate decorations set.

### **Assemble**

1. Secure the first sponge on a cake board or serving plate with a smear of ganache. Pipe a ring of ganache around the edge of the top of the sponge. Spoon the raspberry jam inside the ganache ring and spread it across the sponge with the back of a spoon.
2. Place the second sponge on top of the first and pipe the remaining ganache on the top surface of the cake. Level this top layer of ganache with a spatula or a long knife. Any ganache that spills over the top can be spread over the sides of the cake.
3. Gently peel the chocolate decorations off the baking paper and arrange them on the top of the cake to mimic the face of a clock. Chill the assembled cake in the fridge to set the ganache completely. Serve at room temperature.
4. If not consuming immediately, store the cake in an airtight container in the fridge and bring to room temperature before serving.

# Are you up for a challenge for National Engineering Day 2022?

Here's how you could turn your cake from treat to tremendous:

## 1. Add innovative decorations, for example:

- Use a piping bag or syringe to build 3D structures into your creation such as more elaborate clockwork decoration.
- How about including a 'Fibonacci spiral' on your cake design. Did you know that the Fibonacci sequence is widely used in engineering applications such as computer algorithms and architectural engineering?
- How about turning the clock into a sundial by replacing the hands with a gnomon (pronounced 'no-mon', this is the part of the sundial that casts the shadow)?

## 2. Make your clock hands move:

- What could you use for clock hands? How can you make them rotate? For example, could you make the hands out of icing leaving a hole at the end of each hand for the dowel, chopstick or skewer? A large enough hole would enable you to insert the dowel through it and move the clock hands easily.

## 3. Add an anti-gravity element:

- Use a side bar cake spacer to create the illusion that the clock is floating. Time flies after all!
- Or could you engineer an anti-gravity feature using skewers and dowels?

## 4. Make it light up:

- Make a digital clock by creating numbers out of LED lights.
- How could you power your lights? Could you create a simple lemon battery to light up an LED? If you added more lemons, could you power more lights? What other materials would you need?

## How to enter

- The recipe for the Time to Celebrate Engineering cake will be published on the Royal Academy of Engineering's website and social media channels on 24 October 2022.
- To enter, please photograph or film your cake and share on Twitter, Instagram and/or TikTok on 2 November 2022 by 16:00 GMT (4pm) using the competition hashtags #NationalEngineeringDay and #EngineeringCakes, and tagging @ThisisEng on Twitter and @ThisisEngineering on Instagram or TikTok.
- Judging will take place at 16:00 (4pm) on 2 November 2022.
- Cakes will be judged on their engineering ingenuity by a panel of judges from the Royal Academy of Engineering.
- 10 winners will be announced at 18:00 (6pm) on 2 November 2022.
- Winners will be subsequently contacted through Instagram, TikTok or Twitter via direct message to confirm a UK postage address where one prize pack per winner will be sent.

Read the terms and conditions for this competition here: [www.raeng.org.uk/terms](http://www.raeng.org.uk/terms)