

Anne Bissonnette, PhD  
Associate Professor, Material Culture and Curatorship  
Human Ecology Department, University of Alberta  
Curator, [Anne Lambert Clothing and Textiles Collection](#)



## STEP-BY-STEP INSTRUCTIONS FOR 2020/04/11 BISSONNETTE EYEWEAR-FRIENDLY, TWO-LAYER MASK WITH ROOM FOR A THIRD LAYER

V1 (Version 1 – same fabric all over)  
V2 (Version 2 – dense fabric out and loose fabric in)

Revised April 28, 2020

This homemade cloth facemask is mostly based on a model by Tracy Ma and Natalie Shutler published in the *New York Times* on March 31, 2020, and entitled “How to Make a Face Mask: A sewing pattern for a fabric face mask made from common household materials” (<https://www.nytimes.com/article/how-to-make-face-mask-coronavirus.html>). It has several variations to address:

- the possible use of a **third layer insert** (ideally non-woven cloth like absorbent paper towels);
- a folded edge worn up to allow the **use of eyewear** and a **better mask-to-face seal**, or, alternatively, a single layer stitched edge worn up where a metal wire can be inserted in the seam to contour the nose and create a better mask-to-face seal that may be worn with eyewear;
- a modified version (version 2) that could allow **greater breathability if a densely-woven fabric is used**.

The different ways of wearing the mask is described at <https://clothingtextiles.ualberta.ca/clothfacemasks/>. That link also has access to peer-reviewed scientific information as well as information from other non-reviewed sources.

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### SUPPLIES

#### Equipment

- a sewing machine or simply a sewing needle and some thread
- a tape measure
- scissors
- straight pins, safety pins or paper clips to hold fabrics in place

- a 3 cm ( 1.18") metal paper clip (unfolded measures 9.5 cm (3.75")) or a thin piece of wire than can hold its shape

#### Materials (Versions 1 and 2)

- At least 42 cm (16.5") by 34 cm (13.4") of densely-woven 100% cotton fabric. Go for the highest thread count fabric you can find. Such textiles are typically found in bedding fabrics (pillowcases and sheets).
- If you can breathe well in two layers of your chosen densely-woven fabric, test to see if you can still breathe well when adding a third filtering layer in between, such as a piece of absorbent paper towel. If you can breathe well, proceed with Version 1. If you cannot breathe well and you want to include a non-woven filter insert for added filtration, then do Version 2 of the mask. Please note that breathability is extremely important: **if breathing is too hard through the materials that will filter the air, the air will bypass the mask and come in through other ways** (Davies et al., 2013: 417).

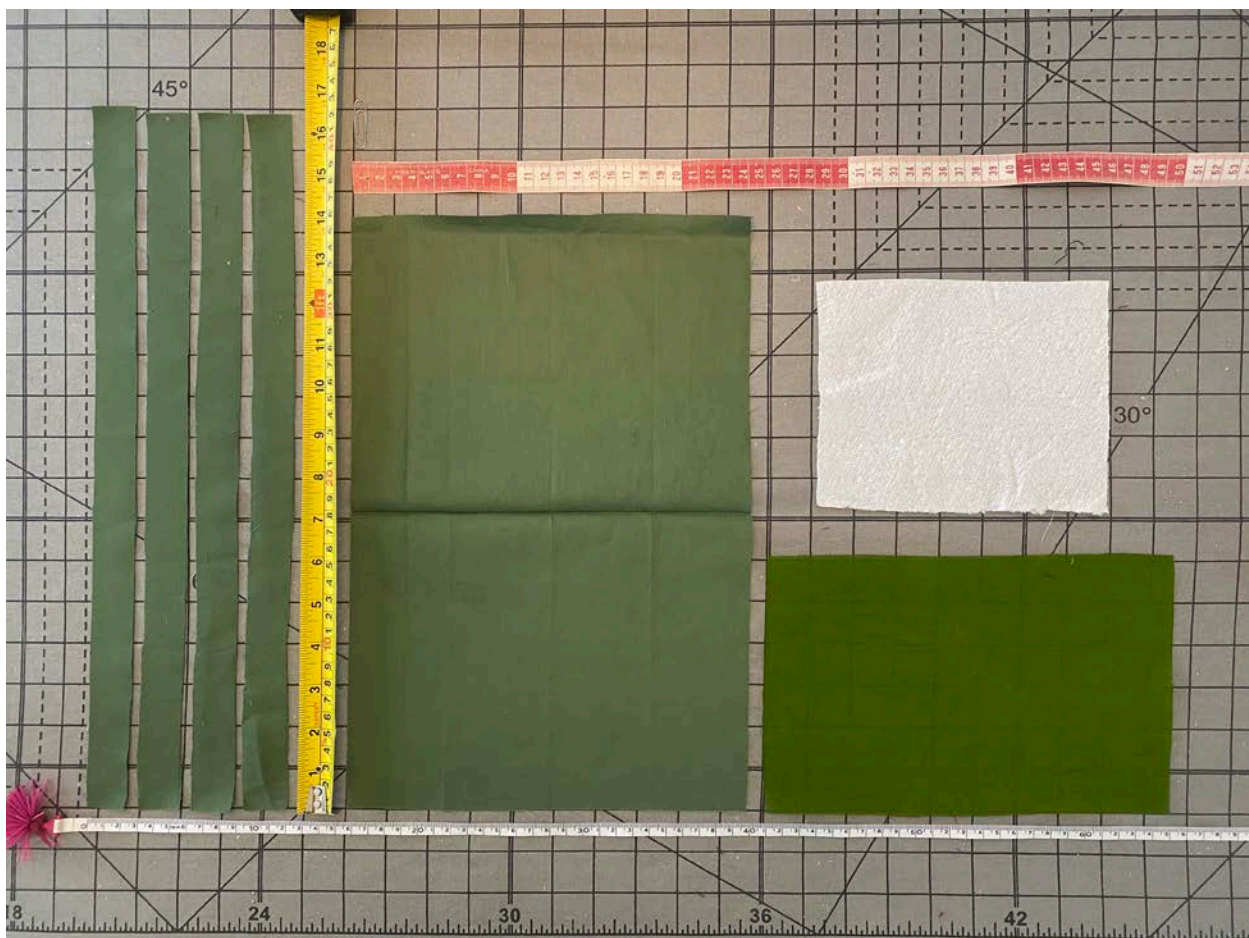
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## Step 1

If you wash your fabric(s) at exactly the measurements given below, the raw edges will unravel and you will not be able to make the mask in the appropriate measurements. You may want to either increase the measurements below and prewash the fabrics or wait until after the mask is assembled to wash the final product.

#### CUT YOUR MATERIALS TO SIZE TO OBTAIN:

- 1) four strips of densely woven 100% cotton fabric that are each 42 cm (16.5") x 2.5 cm (1")
- 2) Version 1: one large rectangle of densely-woven 100% cotton that is 36 cm (14.2") x 24 cm (9.45")
- 3) for Version 2: one small rectangle of loosely-woven 100% cotton that is 15.5 cm (6") x 24 cm (9.45")
- 4) for the filter: a non-woven cloth, like paper towels, slightly narrower than half your large rectangle



## Step 2

IRON AND, FOR VERSION 2, ASSEMBLE:

- 1) Create a ca. 0.5 cm (0.2") fold (with the iron) for one narrow edge of each strip.
- 2) Create a ca. 0.5 cm (0.2") fold (with the iron) for both long edges of each strip: raw edges will meet in the centre.
- 3) Fold the large rectangle in half lengthwise: keep as is for Version 1.
- 4) If you are making Version 2, cut out a section of cloth that measures 13.5 cm (5.3") x 24 cm (9.45") from the large rectangle. Place the loosely-woven fabric over the remaining large rectangle of densely-woven fabric with their "right sides" touching along the cut edge and sew 1 cm (3/8") from the cut edge. Iron this seam allowance towards the densely-woven fabric and top stitch twice: once close to the assembly line and another time close to the end of the 1 cm sewing allowance.
- 5) On the large rectangle (Version 1 all in the same fabric or Version 2 in two fabrics) create ca. 0.5 cm (0.2") fold (with the iron) for both top and bottom edges. Repeat this step to create an additional fold where the previous one was.





### Step 3

#### SEWING OF STRIPS AND THE NARROW EXTREMITIES OF THE LARGE RECTANGLE

N. B.: Make sure that your stitch lines are secured by knots or several back stitches when you start and end your sewing.

- 1) Fold each strips to join the lengthwise fold lines to one another: stitch along the fold lines to create a tie.
- 2) Sew the densely-woven large rectangle folded edges, leaving an unsewn portion 6 cm (2 3/8") from one edge. This small unsewn portion is where you may eventually insert a wire that will contour the nose to create a better seal between the mask and the face.
- 3) Sew the other folded extremity of the large rectangle (do not leave any unsewn portions).





## Step 4

### STITCH PLEATS TOGETHER ON THE SIDES

Starting from the centre fold line of the large rectangle, pin and stitch three pleats. The section above the centre fold line should be a mirror image of the section below the centre fold line. Proceed as follow for the section below the centre fold line:

- 1) 2.5 cm (1") below the centre fold line, fold 1.5 cm of textile underneath;
- 2) 2 cm (0.8") from the previous pleat, fold 1.5 cm underneath;
- 3) 2 cm (0.8") from the previous pleat, fold 1.5 cm underneath.





## Step 5

### SECURE TIES ON ALL FOUR CORNERS

On the section below the centre fold line where the densely woven fabric is found:

- 1) pin the raw edge of one tie below the centre fold line on each side
- 2) pin the raw edge of one tie below the lower edge of the large rectangle on each side





## Step 6

### SECURE TIES ON ALL FOUR CORNERS

- 1) fold the top section on the centre fold line, sandwiching all the bundles of ties inside
- 1) sew over the all the sides of your mask: do so next to your previous seam towards the inside
- 2) cut all loose threads





## Step 7

### TURN INSIDE OUT & TOP STITCH

- 1) pull on the bundles of ties to help you turn the mask inside out
- 2) topstitch on both sides to cover the seam allowance inside the mask
- 3) leave the lower portion of the mask open so that you may insert the third layer of non-woven cloth through this opening



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All photographs by Anne Bissonnette



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## FIT INFORMATION FOR 2020/04/11 BISSONNETTE EYEWEAR-FRIENDLY, TWO-LAYER MASK WITH ROOM FOR A THIRD LAYER

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The step-by-step document to make the mask is described at <https://clothingtextiles.ualberta.ca/clothfacemasks/>. That link also has access to peer-reviewed scientific information as well as information from other non-reviewed sources.

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IMAGES TO SHOW DIFFERENT WAYS OF WEARING THE MASK  
AND THE FIT THEY PROVIDE.

**THE SAME MASK IS USED ON A WOMAN AND A MAN**  
TO SHOW ONE MASK MAY FIT DIFFERENT INDIVIDUALS

ON A SMALLER FACE, THERE WILL BE MORE OVERHANG BELOW THE CHIN,  
BUT AS THE TIES PULLS THE MASK CLOSE AT THE CHIN, THE OVERHANG IS OF NO CONSEQUENCE.

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## OPTION 1: MASK WORN FOLD UP

For those who will **use the mask with eyewear**, the section of the mask that is placed on a fold is made thin enough to fit under eyewear and can thus be placed directly under the eyes. Eyewear may help to create a good seal. The removal of a seam leads to only two layers of cloth rather than four layers (because of seam allowances) and stitching, which is bulky and hard to fit under eyewear. Depending on the wearer's eyewear, this may be the best solution to create a seal. Some eyewear may accommodate the wearing of the mask with the fold down (see next section). To know if a good seal is created, try wearing the mask at different heights: find the one that creates the least fogging in your lenses.

**Woman:** fold up with no eyewear



⇒ The seal between the mask and the face in the orbits of the eyes and around the nose is poor: not ideal.

**Woman:** fold up with eyewear



⇒ Eyewear helps to provide a good seal between the mask and the face in the orbits of the eyes and around the nose: if there is no fogging in your lenses, this is good.



**Man:** fold up with no eyewear



⇒ The seal between the mask and the face in the orbits of the eyes and around the nose is poor: not ideal.

**Man:** fold up with eyewear



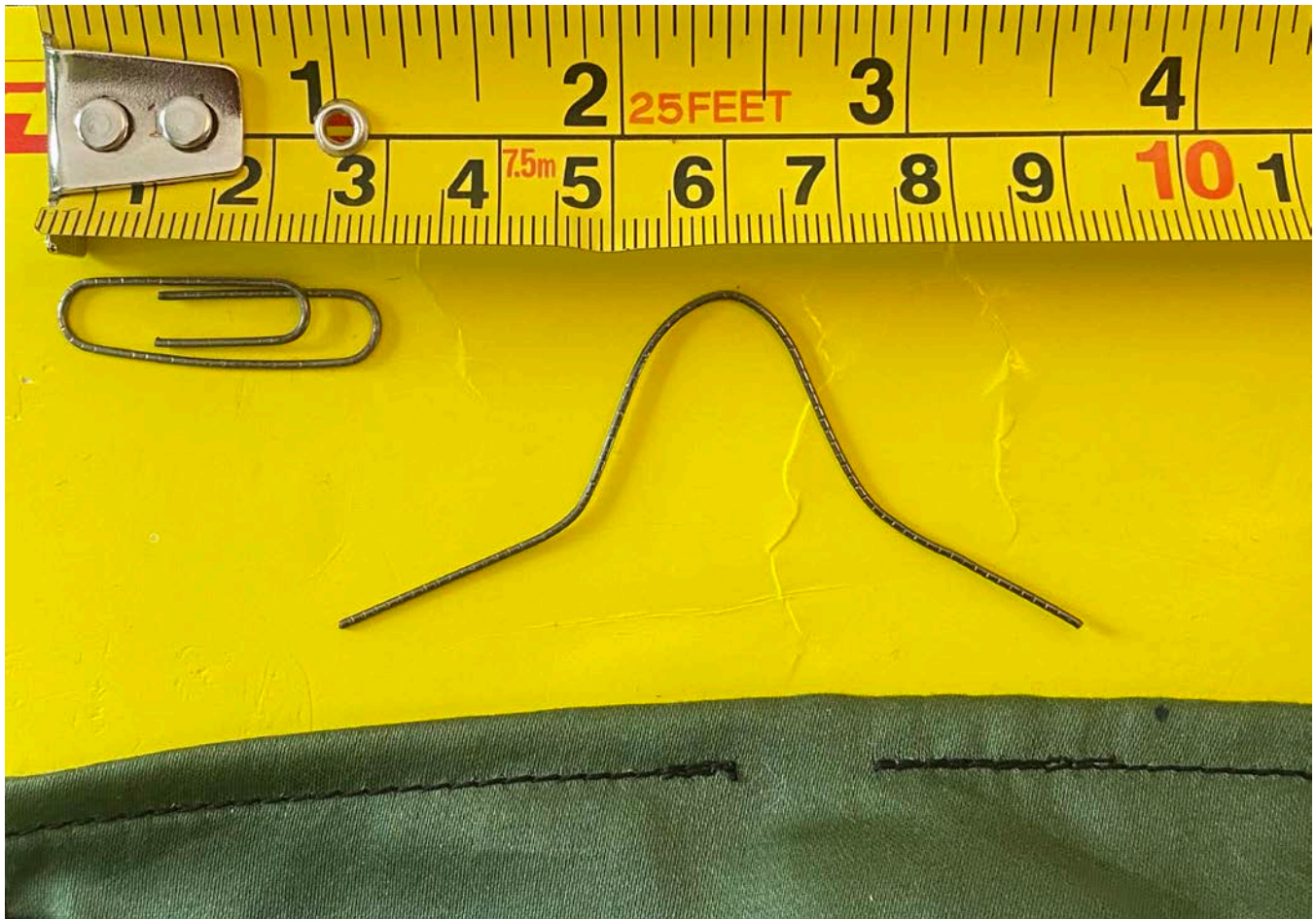
⇒ Eyewear helps to provide a good seal between the mask and the face in the orbits of the eyes and around the nose: if there is no fogging in your lenses, this is good.

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## OPTION 2: MASK WORN FOLD DOWN

You may choose to wear the mask with the fold line below the chin. The stitch line and seam allowances will create more bulk under eyewear. However, the section of the mask that is not stitched close (and thus left with an opening to insert a non-woven cloth filter) has the advantage of having a channel that accommodates a metal wire that will be placed over the nose. This metal wire can be made of a paperclip, garden wire, or any type of wire that retains its shape once bent. Before the insertion of the wire inspect the end for sharp edges. If need be, use pliers to turn the end of both extremities at least 180 degrees to lessen sharp edges.

Once manipulated, the wire from a 3 cm (0.8") paperclip should look like this:



⇒ Insert one extremity of the paperclip into the unsewn opening and slide to have the apex at the centre of the mask.

**Woman:** fold down with wire and no eyewear



⇒ The seal between the mask and the face in the orbits of the eyes and around the nose is good.



**Woman:** fold down with wire and eyewear



⇒ Eyewear **may or may not** fit **over wire** to provide a good seal between the mask and the face in the orbits of the eyes and around the nose: if the glasses sit where they should and if there is no fogging in your lenses, this is good. Do you have older glasses you may try? If not, decide between Option 1 (fold up) and Option 2 (fold down): which works best for you?

**Man:** fold down with wire and no eyewear



⇒ The seal between the mask and the face in the orbits of the eyes and around the nose is good.

**Man:** fold down with wire and eyewear



⇒ Eyewear **may or may not fit over wire** to provide a good seal between the mask and the face in the orbits of the eyes and around the nose: if the glasses sit where they should and if there is no fogging in your lenses, this is good. Do you have older glasses you may try? If not, decide between Option 1 (fold up) and Option 2 (fold down): which works best for you?

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