Lagrangian topology  
(for the impatient)

(UdeM MAT 6359 A; Monday 9-11, Tuesday 9-11)
Montreal time
First class: Sept. 1st; Last class: Dec. 8, 2020

ZOOM LINK (just click)

This is not a course where you will learn about technical details on J-holomorphic curves (no proofs of regularity, compactness and gluing).

References will be provided.

Here is what the course is about:

I. Preliminaries on symplectic manifolds  
(just a few of the basics)
II. Tools

Exercises in each section!

a) Some homological algebra (triangulated categories, dg-categories, $\Lambda^\infty$-categories).

b) Some topology (loop spaces, cobordism).

c) Filtered homological algebra (persistence modules and categories).

d) Morse theory and friends (Floer homology, pearl homology, the Fukaya category, cluster homology, marked Floer theory for inversions).

e) Coefficient rings (Noriko, chains on loop spaces).
III. Structural results

a) From geometry to algebra through Lagrangian cobordism.

b) Lagrangian cobordism categories with surgery models.

c) From algebra back to geometry through marked Floer homology.

d) Pseudo-metrics on spaces of Lagrangians and rigidity.

e) Cobordism groups and Grothendieck groups.
IV. Some calculations (TBD).

Evaluation (for registered students):
- oral presentation (50%)
- written presentation (50%)