SYLLABUS FOR 18.101, FALL 2020
PRELIMINARY – AS OF 24 AUGUST, 2020

(1) September 1: Differentiability of functions. Munkres Section 5.
(2) September 3: Continuous differentiability, Chain rule. Munkres Section 6 and 7.
(3) September 8: Differential equations – Solution of vector equations $dx/dt = f(t, x)$.
(4) September 10: Derivations and the tangent bundle
(5) September 12: Vector fields
(6) September 15: Integration of vector fields
(7) September 17: Higher order derivatives, Hessian.
(8) September 22: Inverse Function theorem, diffeomorphisms.
(9) September 24: Support of a continuous function, partitions of unity.
(10) September 29: Iterated Riemann integral, linear change of variable.
(11) October 1: Localization and change of variable
(12) October 6: Tensors and forms
(13) October 8: Pull-back of forms
(14) October 15: DeRham d and Poincaré
(15) October 20: Local coordinates and manifolds
(16) October 22: Functions and vector fields
   Test here somewhere
(17) October 27: Tensor bundles
(18) October 29: Differential forms on manifolds
(19) November 3: Orientation and integration
(20) November 5: deRham cohomology
(21) November 10: Metrics
(22) November 17: Hamiltonian vector fields
(23) November 19: Geodesics
(24) December 1:
(25) December 3:
(26) December 8: Overview.