

Lecture 6 Whitney theorems
about $M^n \subset \mathbb{R}^{2n+1}$ and immersions
in \mathbb{R}^{2n} . Description of tangent spaces
 $T(M^n)$ and space of unit vectors $V(M^n)$
of manifolds. Local coordinates.
Gauss Map $V \xrightarrow{2n-1} S^{2n-1}$

Other applications of transversality:

a) Intersection index

b) degree of map

Homotopy invariance theorem.

Lecture 7

Continuation of Lecture 6. Homotopy (cobordism)
invariance of intersection index and degree.

Lecture 8. Topological properties of Gaussian
map for surfaces in \mathbb{R}^3 . Its degree, Gaussian
curvature.

Lecture 9. Critical points of functions (functions \equiv
 \equiv projections on some direction in \mathbb{R}^n). Morse index.
degree of Gauss map and critical points. Jacobians
Definition of Euler characteristic through
critical points of function. Exercise of Maxwell
(island in sea, alt. sum of cr. pts $= 1$)

Lecture 10. degree of Gaussian map and Euler
characteristic (Hypersurfaces in \mathbb{R}^n).
Intersection Index. Definition and Properties.