

# Contents

Chapter 1. Introduction	1
1.1. General	1
1.2. Background	1
1.3. Applications	3
Acknowledgments	5
Chapter 2. Degree theory	7
2.1. The manifold of immersions and its tangent bundle	7
2.2. Curvature as a vector field	9
2.3. Simplicity	11
2.4. Surjectivity	12
2.5. Finite dimensional sections	14
2.6. Extensions	16
2.7. Orientation - the finite-dimensional case	17
2.8. Orientation - the infinite-dimensional case	19
2.9. Constructing the degree	20
2.10. Varying the metric	22
Chapter 3. Applications	25
3.1. The generalised Simons' formula	25
3.2. Prescribed mean curvature	29
3.3. Calculating the Degree	34
3.4. Extrinsic Curvature	40
3.5. Special Lagrangian curvature	45
3.6. Extrinsic curvature in two dimensions	47
Appendix A. Weakly smooth maps	53
Appendix B. Prime immersions	57
Bibliography	61