

# Logic Syllabus - Orals Minor Topic

## First-Order Logic (from Chapters 1-3 of [End01])

- Gödel's Completeness Theorem for First-Order Logic
- Compactness Theorem for First-Order Logic
- Löwenheim-Skolem Theorem
- Łoś-Vaught Test
- Non-Standard Models of Arithmetic
- Decidability Results for Reducts of Arithmetic
- Gödel's First and Second Incompleteness Theorems
- Church's Theorem

## Finite Model Theory (from Chapters 1-3 and 9 of [Lib04])

- Karp's Theorem
- Ehrenfeucht-Fraïssé Games
- Trakhtenbrot's Theorem
- Fagin's Theorem

## References

[End01] Enderton, H., *A Mathematical Introduction to Logic* (Harcourt Academic Press, San Diego, 2001)

[Lib04] Libkin, L., *Elements of Finite Model Theory* (Springer-Verlag, Berlin, 2004)