

## How to Prove NP-Completeness in This Course

*To prove that a given language is NP-complete:*

- Prove that the language is in NP.
- Construct a (mapping) reduction from another language already known to be NP-complete to the given language.
- This known NP-complete language can be any language for which NP-completeness has been proved in the textbook, in lectures, or in class handouts (but you should cite the appropriate reference).
- How do you decide which existing language to use to reduce to the given language? You may be given a hint (or told outright), but if not, it's because there's a fairly obvious choice, most likely based on similarity to the given language.
- Prove that your reduction has the desired properties:
  - that it truly is a reduction from that NP-complete language to the given language; and
  - that it runs in polynomial time.