

Homework #1**Assigned on Friday, Jan 15; due on Friday, Jan 22**

Write a computer code for obtaining the moment-curvature ($M-\phi$) relation for a structural (i.e., low-carbon) steel I-section. Assume that the section has rectangular flanges and web, with sharp corners. Assume an elastic-perfectly plastic stress-strain behavior for the material, with $\sigma_y = 250 \text{ MPa}$ and $E = 200 \text{ GPa}$.

Plot the relationship for a section with flange width (b_f) = **100 mm**, flange thickness (t_f) = **8.5 mm**, depth (d) = **200 mm**, and web thickness (t_w) = **7 mm**. Also find out S , Z and f .

You can write your code in any programming language (C, Fortran), mathematical programming language (Matlab), or spreadsheet (Excel, Gnumeric, OpenOffice). Provide the formulas if you are submitting a spreadsheet program. Please note that you will need to use this code for future homeworks.