

## MSE 426

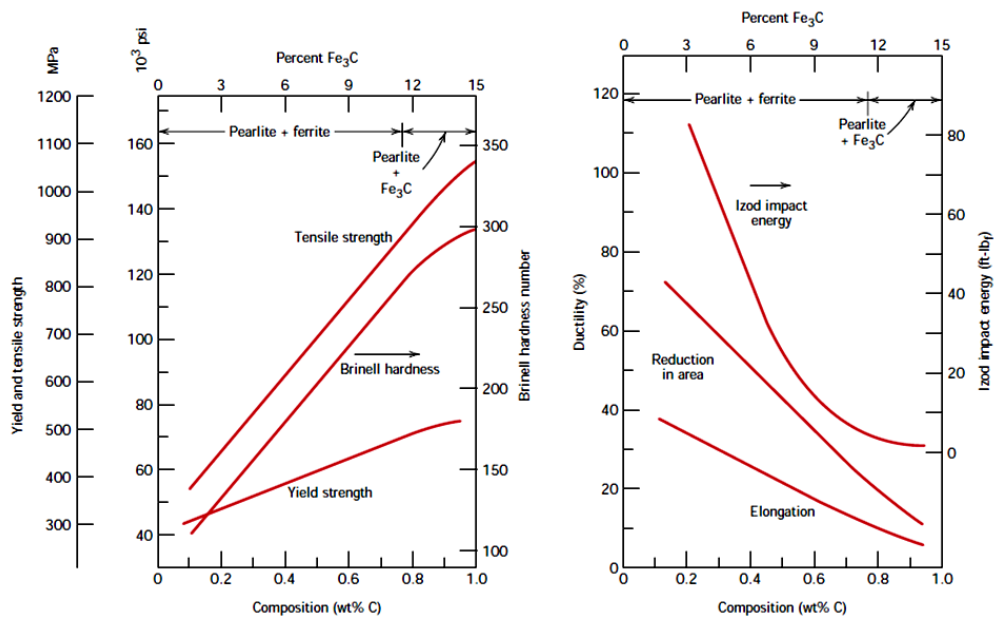
### HOMEWORK 1

1-The microstructure of an iron-carbon alloy consists of proeutectoid ferrite and pearlite; the weight percentages of the phases are 20 % and 80 %, respectively. Determine the carbon content of the alloy.

2-Draw the room temperature microstructure of an equilibrium cooled steel which has 94 % total ferrite.

3-a) Distinguish between the following three types of plain-carbon steels in terms of carbon content and hardness. i) eutectoid, ii) hypoeutectoid, iii) hypereutectoid

(b) As carbon content of a steel increases, hardness and yield strength also increase while ductility (% elongation or % reduction in area) decreases as shown in figure below. Briefly explain the reason.



Due 12.10.2017