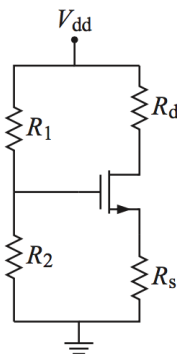


## WUN2K FOR LECTURE 18

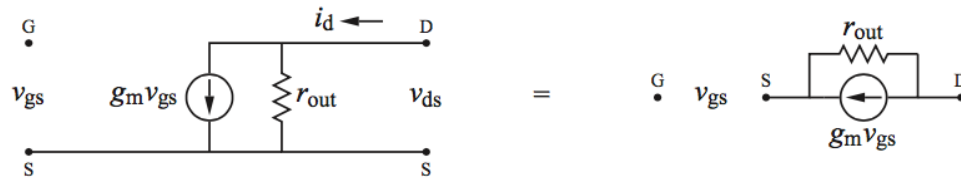
These are notes summarizing the main concepts you need to understand and be able to apply.

- As for bipolar transistors, FET circuits (especially amplifier circuits) need to be DC biased. A typical (“universal”) DC bias circuit is shown. This can be analyzed using Kirchoff’s rules and Ohm’s Law, along with the model equations from WUN2K 16.



- A useful small-signal AC model for a FET is  $i_d = g_m v_{gs} + \frac{1}{r_{out}} v_{ds}$ , where  $g_m$  is the *transconductance* (typically a few mA/V to a few A/V).  $r_{out}$  is the output impedance; in the saturation regime of the FET, this can often be treated as infinite.

- A FET can often be treated according to its AC equivalent model, drawn as:



- The “how-to” for analyzing FET amplifiers and similar circuits is analogous to the one for bipolar transistors, except that the FET AC equivalent should be used.
- FET amplifiers come in common-source, common-drain, and common-gate varieties, which are analogous to the bipolar transistor amplifiers we looked at.