

Umm Al-Qura Universtiy, Makkah
Department of Electrical Engineering
Special Topics in Electronics and Communications (8024990)
Term 1; 2021/2022
Homework 11

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Do not submit this homework. There will be a quiz from this homework on Thursday (Dec 09, 2021).

Topics covered in this week:

- Switched capacitors as resistors.

$$R_{equ} = \frac{1}{f_c C_R} \quad \text{where } f_c \text{ is the clock (or switching) frequency.}$$

- The transfer function for op-amp based switched capacitor inverting integrator

$$\frac{V_{out}(s)}{V_{in}(s)} = -\frac{1}{RCs} = -\frac{f_c C_R}{Cs} = -\frac{f_c}{j\omega} \left(\frac{C_R}{C} \right)$$

Where the clock frequency (f_c) should be much higher than the maximum signal frequency.