



# Operational Amplifiers: Theory and Design

**ON-LINE CLASS**  
**NOVEMBER 9-20, 2020**

It is necessary to buy the book "Operational Amplifiers, Theory and Design", Third Edition, Johan Huijsing, 2017 Springer International Publishing, to follow the course.

<b>WEEK 1</b>	<b>NOVEMBER 9-13</b>			
<b>WEEK 2</b>	<b>NOVEMBER 16-20</b>			
	Central European Time	Eastern Standard Time	Pacific Standard Time	India Standard Time
	CET (Delft)	EST (New York)	PST (California)	IST (India)
<b>DAILY SCHEDULE</b>	3:00 - 6:30 pm	9:00 am - 12:30 pm	6:00 - 9:30 am	7:30 - 11:00 pm
<b>WEEK 1</b>	<b>CET Time Zone</b>			
November 9	3:00 - 4:00 pm	Introduction / Definitions/ Macromodels		J.H. Huijsing
	4:15 - 5:15 pm	Precision Applications / Dynamic Range		J.H. Huijsing
	5:30 - 6:30 pm	Hands-on Simulations / Questions & Answers		S. Karmakar / J.H. Huijsing
November 10	3:00 - 4:00 pm	Input Stages: Offset, Noise, CMRR		R. Hogervorst
	4:15 - 5:15 pm	Rail-to-Rail Capability		R. Hogervorst
	5:30 - 6:30 pm	Hands-on Simulations / Questions & Answers		S. Karmakar / R. Hogervorst
November 11	3:00 - 4:00 pm	Output Stages: Voltage and Current Efficiency		J.H. Huijsing
	4:15 - 5:15 pm	Class-AB Biasing		J.H. Huijsing
	5:30 - 6:30 pm	Hands-on Simulations / Questions & Answers		S. Karmakar / J.H. Huijsing
November 12	3:00 - 4:00 pm	Frequency Compensation, Slew-Rate		R.G.H. Eschauzier
	4:15 - 5:15 pm	Non-Linear Distortion		R.G.H. Eschauzier
	5:30 - 6:30 pm	Hands-on Simulations / Questions & Answers		S. Karmakar / R.G.H. Eschauzier
November 13	3:00 - 4:00 pm	Two-Stage Configurations		J.H. Huijsing
	4:15 - 5:15 pm	Three-Stage Configurations		J.H. Huijsing
	5:30 - 6:30 pm	Hands-on Simulations / Questions & Answers		S. Karmakar / J.H. Huijsing
<b>WEEK 2</b>				
November 16	3:00 - 4:00 pm	Three-Stage Configurations		K.J. de Langen
	4:15 - 5:15 pm	Three-Stage Configurations		K.J. de Langen
	5:30 - 6:30 pm	Hands-on Simulations / Questions & Answers		S. Karmakar / K.J. de Langen
November 17	3:00 - 4:00 pm	Four-Stage Configurations		J.H. Huijsing
	4:15 - 5:15 pm	Fully Differential OpAmps		J.H. Huijsing
	5:30 - 6:30 pm	Hands-on Simulations / Questions & Answers		S. Karmakar / J.H. Huijsing
November 18	3:00 - 4:00 pm	Dynamic Offset Compensation Techniques		J.F. Witte
	4:15 - 5:15 pm	Dynamic Offset Compensated Operational CMOS Amplifiers		J.F. Witte
	5:30 - 6:30 pm	Hands-on Simulations / Questions & Answers		S. Karmakar / J.F. Witte
November 19	3:00 - 4:00 pm	Auto-Zero and Chopper Amplifiers		J.H. Huijsing
	4:15 - 5:15 pm	Auto-Zero and Chopper Amplifiers Overview		J.H. Huijsing
	5:30 - 6:30 pm	Hands-on Simulations / Questions & Answers		S. Karmakar / J.H. Huijsing
November 20	3:00 - 4:00 pm	Capacitive - Coupled Amplifiers		Q. Fan
	4:15 - 4:45 pm	Capacitive - Coupled Amplifiers		Q. Fan
	5:00 - 6:00 pm	Evaluation		J.H. Huijsing