



Training course programme

# RF & microwave engineering 101

International (English) live online course,  
90 study hours

**Begins 16-March 2021**

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**[www.int-RF.com](http://www.int-RF.com)**

### **Introduction:**

**RF and Microwave Engineering 101** is Interlligent's Flagship course for over 20 years. This comprehensive 90-hours course is provided online by live video lectures (via Zoom platform) and focuses on the physical layer (PHY) of RF and Microwave systems. The training programme aims to bring electronics engineering graduates into the level of junior RF and Microwave engineers. The programme includes various topics such as Noise budget, Non-linearity, Impedance matching, S-Parameters, Filters, Basic RF components, Receiver and transmitter architectures, IF digitizers, PLL synthesizers, Antennas and link budget and practical test and measurements set-ups.

The training combines theoretical studies with practical examples from the industry that clearly demonstrate the studied subjects.

Attendees will receive certified electronic copies of our original training materials which include: Theoretical background materials (whitepapers), homework assignments with their explained solutions and copies of the presentations.

An optional online final exam is available for attendees who wish to add a final grade to their certificate of completion.

### **Target audience:**

Electronics engineers who would like to gain RF expertise, and in particular:

- Engineers who are newcomers to the RF and microwave industry.
- DSP / Algo Engineers who would like to expand their knowledge in the PHY world of radio system.
- Experienced microwave engineers who would like to refresh / update their knowledge.

### **Required prior knowledge:**

The participants are expected to have basic familiarity with Fourier transforms, Laplace transforms, random processes, and basic circuit theory. In any case, all relevant subjects in the course which require prior knowledge will be accompanied by theoretical background materials that include the required background.

### **Presenter:**

The course will be presented by Mr. Oren Hagai, the founder of INTERLLIGENT RF and Microwave Solutions. Bio available online at: <https://www.linkedin.com/in/4x1vi>

### **Programme's outline:**

The course includes 90 study hours. The live presentations will be broadcasted using "Zoom" platform, during 20 weekly meetings, each lasting 4.5 hours. All weekly meetings shall be held on Tuesdays, starting 16-March-2021. **All meetings will begin at 15:00 UTC (UK time), and will end at 19:30 UTC (UK time)**

### **Meetings timetable and study subjects:**

Meeting No.	Date	Subject index	Study subject	Study hours
1	16-MAR-21	1	Introduction to the exciting world of RF and Microwave engineering	4.5
2	23-MAR-21	2A	Thermal noise, SNR and Noise Figure (1)	4.5
3	30-MAR-21	2B	Thermal noise, SNR and Noise Figure (2)	4.5
4	6-APR-21	3A	Non-Linear device characterization (1)	4.5
5	13-APR-21	3B	Non-Linear device characterization (2) and dynamic range	4.5
6	20-APR-21	4	RF and microwave Mixers and spur charts	4.5
7	27-APR-21	5	Standard test equipment (1): Spectrum Analysis basics, RF signal generators	4.5
8	4-MAY-21	6A	Distributed systems and impedance matching techniques (1)	4.5
	11-MAY-21	N/A		
9	18-MAY-21	6B	Distributed systems and impedance matching techniques (2)	4.5
10	25-MAY-21	7	Standard test equipment (2): Network Analysis basics, Power meters, cable and connector care	4.5
11	1-June-21	8	Passive RF devices and basic building blocks	4.5
12	8-June-21	9	Signal Sources, PLL Synthesizers, and phase noise	4.5
13	15-June-21	10A	Digital wireless communications and Vector Signal Analysis (1)	4.5
14	22-June-21	10B	Digital wireless communications and Vector Signal Analysis (2)	4.5
15	29-June-21	11A	RF and IF sampling by RF ADCs (1)	4.5
16	6-July-21	11B	RF and IF sampling by RF ADCs (2)	4.5
	13-July-21	N/A	Left for spare	
17	20-July-21	12	Transmitter and Receiver system architectures	4.5
18	27-July-21	13	Antenna concepts and the wireless channel	4.5
19	3-AUG-21	14	Moving up to millimetre waves	4.5
20	10-AUG-21	15	Concluding exercise: Receiver system design	4.5
<b>Total, 20 weekly online meetings, 4.5 study hours each</b>				<b>90</b>
<b>All meetings will begin at 15:00 UTC (UK time), and will end at 19:30 UTC (UK time)</b>				

### **Pricing and registration:**

For pricing quotations and registration, please contact our training centre manager: Mrs. Ilanit Kalman, Email: [Ilanit.k@int-rf.com](mailto:Ilanit.k@int-rf.com) or at [info@int-rf.com](mailto:info@int-rf.com)