| A THE OF TECHNOLOG | | AN A WIND AND AND AND AND AND AND AND AND AND A | National Institute of Technology Meghalaya An Institute of National Importance | | | | | | | | | | | | CURRICULUM | | |
|--------------------------|--|--|---|---|--|---|---|--|---|---|--|--|--|--|------------|-------------|------------|
| P | rogrami | Master of Technology in VLSI and Embedded Systems Year of Regulation | | | | | | | | | | | 2018-19 | | | | |
| Г | epartme | | | | | | | | | | | ter | II | | | | |
| Course Code EC 520 | | Course Name | | | | | | | Credit | | tStructure | | | Marks Distribution | | n | |
| | | | | | | | | | L | Т | Р | С | INT | MID | END | Total | |
| | | RFIC DESIGN | | | | | | | | 3 | 0 | 0 | 3 | 25 | 25 | 50 | 100 |
| Course Objectives | | To learn about the RF circuit (active and passive) design basics | | | | | | | | Course | CO1 | Able to learn about the RF circuit (active and passive) design basics | | | | | ve) design |
| | | To learn about the RF Frontend design | | | | | | | CO2 | | Able to a | Able to analyze about the RF Fronte | | | | | |
| | | To learn about the RF Receiver design | | | | | | | | Outcomes | CO3 | Able to design RF Receiver | | | | | |
| | | To lear | rn about the RF Transmitter design | | | | | | | CO4 | Able to design RF Transmitter | | | | | | |
| No. | COs | | | | 1 | T | | with Prog | gram Out | tcomes (POs) | | 1 | | | | Mapping wit | h PSOs |
| | 0.03 | PO | 01 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 1 | CO1 | 2 | | 3 | 2 | 1 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 3 |
| 2 | CO2 | 3 | | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| 3 | CO3 | | | 3 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 |
| 4 | CO4 | 2 | | 2 | 3 | 0 | 2 | 2 | 3 | 0 | 2 | 0 | 0 | 1 | 0 | 3 | 2 |
| | | | | | | | | | SY | LLABUS | | | | | Ηοι | | |
| lo. | | | | | | Content | | | | | | | | | | | COs |
| | Review Of RF Basics Review of RF Theory: RF range, skin effect, behavior of various passive components like R, L, C, at high RF, their equivalent circuits at high RF. Transmission line theory, reflection coefficient, Smith chart calculation, impedance matching, S-parameter. 4 Introduction to RF Design 4 | | | | | | | | | | | | | | | | |
| Ι | Review equiva S-para | w of RH alent circ umeter. | F The cuits a | eory: RF at high RI Design | F. Transn | nission lin | e theory, r | eflection | coefficie | nt, Smith cha | rt calcul | ation, impe | edance mat | tching, | 4 | | CO1 |
| I | Review equiva S-para Introdu Basic modul | w of RI alent circo imeter. uction to concepts | F The cuits a o RF I os in F istorti | eory: RF at high R Design RF design ion (IMD | F. Transn | nission lin gn, nonlir | e theory, r | eflection of the second | coefficie gain com | | rt calcul | ation, impe | edance mat | tching, n, inter | 4 | | CO1 |
| I II III | Review equiva S-para Introdu Basic modul analys Basics | w of RH alent circ unction to concepts ation di is of act | F The cuits a o RF I is in F istorti ive do | eory: RF at high RJ Design RF design ion (IMD evices. | F. Transn n: RF desi n), input i | nission lin gn, nonlir ntercept p | e theory, r nearity, han point (IIP3 | eflection rmonics, g & IIP2), | coefficie gain com , inter sy | nt, Smith cha | rt calcul ensitizat rence. N | ation, impe ion, cross 1 loise, types | nodulation s of noise, | tching, n, inter | | | CO1 CO2 |
| 111 | Review equiva S-para Introdu Basic modul analys Basics Antem Receiv TRF r Design | w of RH alent circ uneter. uction to concepts ation di is of act s of RF H na desig ver Desig | F The cuits a o RF 1 s in F istorti- tive do Fronte gn: Mi gn s, hete epts-1 | eory: RF at high R Design RF design ion (IMD evices. end icrostrip a erodyne r : Low r | F. Transn T: RF desi), input i and patch receivers, noise am | nission lin gn, nonlir ntercept p antenna fe Homodyr plifiers, v | e theory, r nearity, han point (IIP3 or 915 MH | eflection rmonics, g & IIP2), [z and 2.4 rs, their c pologies, | GHz. R omparise compar | nt, Smith cha pression, des ymbol interfe | ensitizat rence. N ers- type | ation, impe | edance mat modulation s of noise, n | h, inter , noise | 6 | | |
| | Review equiva S-para Introdu Basic modul analys Basics Antem Receiv TRF r Design compa | w of RH alent circumeter. uction to concepts ation di is of act s of RF F na desig ver Desig receivers n conce arison an mitter Do | F The cuits a o RF 1 s in F istorti- tive do Fronte gn: Mi gn s, hete cpts-1 nd des esign ots-2: | eory: RF at high R Design RF design ion (IMD evices. end icrostrip a erodyne r : Low r sign, Osci | F. Transn T. RF desi), input i and patch receivers, noise am illators (en | nission lin gn, nonlir ntercept p antenna fa Homodyr plifiers, w mphasis to | e theory, r nearity, han point (IIP3 or 915 MH ne receiver various to o PLL and | eflection rmonics, g & IIP2), [z and 2.4 rs, their c pologies, VCO) des | coefficie gain com , inter sy GHz. RI ompariso compar sign. | nt, Smith cha pression, des ymbol interfe F Switch, Filt | ensitizat rence. N ers- type receiver esign. M | ation, impe ion, cross n loise, types and design architecture lixers, var | edance mat modulation s of noise, n e and its o ious topo | tching, n, inter , noise design. logies, | 9 | | CO2 |

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2. B. Razavi, RF Microelectronics, PHI, Edition 1, 1998.

3. S. C. Cripps, RF Power Amplifiers for Wireless Communications , Artech House, Inc. Publication, 1st Edition, 1999

Supplementary Readings

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2. L.E Larson, RF and Microwave circuit design for wireless communication, Artech House Inc. Publication, 1st Edition, 1997.