



# KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE

Opp : Yerragattu Gutta, Hasanparthy (Mandal), WARANGAL - 506 015, Telangana, INDIA.

काकतीय प्रौद्योगिकी एवं विज्ञान संस्थान, वरंगल - ५०६ ०१५ तेलंगाना, भारत  
కాకతీయ సాంకేతిక విజ్ఞాన శాస్త్ర విద్యాలయం, వరంగల్ - ౫౦౬ ౦౧౫ తెలంగాణ, భారతదేశము

(An Autonomous Institute under Kakatiya University, Warangal)

(Approved by AICTE, New Delhi; Recognised by UGC under 2(f) & 12(B); Sponsored by EKASILA EDUCATION SOCIETY)

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## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

### M. Tech. - Digital Communications

PRR -20

## SCHEME OF INSTRUCTION & EVALUTION

(I Semester to IV Semester)

(Applicable from the Academic Year 2020-21)



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### VISION OF THE INSTITUTE

- To make our students technologically superior and ethically strong by providing quality education with the help of our dedicated faculty and staff and thus improve the quality of human life

### MISSION OF THE INSTITUTE

- To provide latest technical knowledge, analytical and practical skills, managerial competence and interactive abilities to students, so that their employability is enhanced
- To provide a strong human resource base for catering to the changing needs of the Industry and Commerce
- To inculcate a sense of brotherhood and national integrity

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

### VISION OF THE DEPARTMENT

- Develop the department into a full-fledged center of learning in various fields of Electronics and Communication Engineering in pursuit of excellence in Education, Research, Entrepreneurship and Technological services to the society

### MISSION OF THE DEPARTMENT

- Imparting quality education to develop innovative and entrepreneurial professionals fit for globally competitive environment
- To nurture the students in the field of Electronics and Communication Engineering with an overall back-ground suitable for attaining a successful career in higher education, research and industry

| <b>PROGRAM EDUCATIONAL OBJECTIVES (PEOs)</b>                |   |
|---|---|
| <b>PG – M.Tech. (Digital Communications)</b>                |   |
| <b>PROGRAM EDUCATIONAL OBJECTIVES (PEOs)</b>                | The post graduates of Digital Communications will be able to  |
| <b>PEO1<br/>(Research and Innovation)</b>                   | <i>engage in research, innovation and in teaching in HE institutions</i>  |
| <b>PEO2<br/>(Technical expertise and Successful career)</b> | <i>excel in profession in industry, and entrepreneurship with updated technologies in signal processing, digital communication and wireless technologies/network domains.</i>           |
| <b>PEO3<br/>(Soft skills and Lifelong learning)</b>         | <i>exhibit professional ethics, effective communication, and teamwork in solving engineering problems by adapting contemporary research towards sustainable development of society.</i> |

| <b>PROGRAM OUTCOMES (POs) &amp; PROGRAM SPECIFIC OUTCOMES (PSOs)</b> |   |
|--|---|
| <b>PG – M.Tech. (Digital Communications)</b>                         |   |
| <b>PROGRAM OUTCOMES (POs)</b>  | <b>At the time of graduation,</b> the post graduates of Digital Communications will be able to ...  |
| <b>PO1</b>   | <i>independently carry out research /investigation and development work to solve practical problems</i>   |
| <b>PO2</b>   | <i>write and present an effective technical report/document</i>   |
| <b>PO3</b>   | <i>demonstrate competence in the area of Digital Communications</i>   |
| <b>PROGRAM SPECIFIC OUTCOMES (PSOs):</b>                             |   |
| <b>PSO1</b>  | <i>Apply knowledge of signal processing and wireless communication for development of effective and innovative solutions to engineering problems.</i>                         |
| <b>PSO2</b>  | <i>apply appropriate methodology, contemporary hardware and software tools to solve complex engineering problems related to signal processing and wireless communication.</i> |



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING  
KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL - 15  
(An Autonomous Institute under Kakatiya University, Warangal)  
SCHEME OF INSTRUCTION & EVALUATION FOR TWO YEAR POSTGRADUATE PROGRAMME  
**M.TECH. (DIGITAL COMMUNICATIONS)**

**PRR-20**

**SEMESTER-I**

| S. No. | Course Type | Course Code | Course Name   | Teaching scheme |   |   | Credits | Evaluation Scheme |     |    |     |       |     |     |             |       |
|--------|-------------|-------------|---|-----------------|---|---|---------|-------------------|-----|----|-----|-------|-----|-----|-------------|-------|
|        |             |             |   | L               | T | P |         | CIE -TA           |     |    |     |       |     | ESE | Total Marks |       |
|        |             |             |   |                 |   |   |         | PRE               |     |    |     | Minor | MSE |     |             | Total |
|        |             |             |   |                 |   |   |         | ATLP              | CRP | CP | PPT |       |     |     |             |       |
| 1      | PC          | P20DC101    | Professional Core-1:<br>Advanced DSP Processors                 | 3               | - | - | 3       | 8                 | 8   | 8  | 6   | 10    | 20  | 60  | 40          | 100   |
| 2      | PC          | P20DC102    | Professional Core-2:<br>Modern Communication Techniques         | 3               | - | - | 3       | 8                 | 8   | 8  | 6   | 10    | 20  | 60  | 40          | 100   |
| 3      | PE          | P20DC103    | Professional Elective-1/ MOOC-1                                 | 3               | - | - | 3       | 8                 | 8   | 8  | 6   | 10    | 20  | 60  | 40          | 100   |
| 4      | PE          | P20DC104    | Professional Elective-2/ MOOC-2                                 | 3               | - | - | 3       | 8                 | 8   | 8  | 6   | 10    | 20  | 60  | 40          | 100   |
| 5      | PC          | P20DC105    | Professional Core Lab-1:<br>Advanced DSP Processors Lab         | -               | - | 4 | 2       | -                 | -   | -  | -   | -     | -   | 60  | 40          | 100   |
| 6      | PC          | P20DC106    | Professional Core Lab-2:<br>Modern Communication Techniques Lab | -               | - | 4 | 2       | -                 | -   | -  | -   | -     | -   | 60  | 40          | 100   |
| 7      | MC          | P20MC107    | Research Methodology & IPR                                      | 2               | - | - | 2       | 8                 | 8   | 8  | 6   | 10    | 20  | 60  | 40          | 100   |
| 8      | AC          | P20AC108    | Audit Course-1  | 2               | - | - | 1       | 8                 | 8   | 8  | 6   | 10    | 20  | 60  | 40          | 100   |
| Total: |             |             |   | 16              | - | 8 | 19      | 48                | 48  | 48 | 36  | 60    | 120 | 480 | 320         | 800   |

[L= Lecture, T = Tutorials, P = Practicals, C = Credits, ATLP = Assignments, CRP = Course Research Paper, CP = Course Patent, PPT = Course Presentation, Minor=Minor Examination, MSE=Mid Semester Examination and ESE=End Semester Examination]

| Professional Elective-1/ MOOC-1                  | Professional Elective-2/ MOOC-2                       | Audit Course-1                                |
|--|---|---|
| P20DC103A: Cognitive Radio                       | P20DC104A: Statistical Signal Processing              | P20AC108A: English for Research Paper Writing |
| P20DC103B: Smart Antennas                        | P20DC104B: Information and Coding Theory              | P20AC108B: Sanskrit for Technical Knowledge   |
| P20DC103C: Probability Theory and Linear Algebra | P20DC104C: Advanced Cellular and Mobile Communication | P20AC108C: Constitution of India              |
| P20DC103D: MOOCs                                 | P20DC104D: MOOCs                                      | P20AC108D: Pedagogy Studies                   |

**Total Contact Periods/Week: 26**

**Total Credits: 19**

**Additional Learning:** Students are advised to do MOOCs to bridge the gap in the curriculum as suggested in the DAC. The credits will be provided in the grade sheet.



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**M.TECH. (DIGITAL COMMUNICATIONS)**  
**SEMESTER-II**

**PRR-20**

| S. No.        | Course Type | Course Code | Course Name  | Teaching scheme |          |           | Credits   | Evaluation Scheme |           |           |           |           |            |            |             |            |
|---------------|-------------|-------------|--|-----------------|----------|-----------|-----------|-------------------|-----------|-----------|-----------|-----------|------------|------------|-------------|------------|
|               |             |             |  | L               | T        | P         |           | CIE - TA          |           |           |           |           |            | ESE        | Total Marks |            |
|               |             |             |  |                 |          |           |           | PRE               |           |           |           | Minor     | MSE        |            |             | Total      |
|               |             |             |  |                 |          |           |           | ATLP              | CRP       | CP        | PPT       |           |            |            |             |            |
| 1             | PC          | P20DC201    | Professional Core-3:<br>Ad Hoc Wireless Networks and its Protocols | 3               | -        | -         | 3         | 8                 | 8         | 8         | 6         | 10        | 20         | 60         | 40          | 100        |
| 2             | PC          | P20DC202    | Professional Core-4:<br>Machine Learning for Communication System  | 3               | -        | -         | 3         | 8                 | 8         | 8         | 6         | 10        | 20         | 60         | 40          | 100        |
| 3             | PE          | P20DC203    | Professional Elective-3/ MOOC-3                                    | 3               | -        | -         | 3         | 8                 | 8         | 8         | 6         | 10        | 20         | 60         | 40          | 100        |
| 4             | PE          | P20DC204    | Professional Elective-4/ MOOC-4                                    | 3               | -        | -         | 3         | 8                 | 8         | 8         | 6         | 10        | 20         | 60         | 40          | 100        |
| 5             | PC          | P20DC205    | Professional Core Lab-3:<br>Wireless Communication Networks Lab    | -               | -        | 4         | 2         | -                 | -         | -         | -         | -         | -          | 60         | 40          | 100        |
| 6             | PC          | P20DC206    | Professional Core Lab-4:<br>Machine Learning Lab                   | -               | -        | 4         | 2         | -                 | -         | -         | -         | -         | -          | 60         | 40          | 100        |
| 7             | PROJ        | P20DC207    | Mini Project with Seminar  | -               | -        | 4         | 2         | -                 | -         | -         | -         | -         | -          | 100        | -           | 100        |
| 8             | AC          | P20AC208    | Audit Course-2   | 2               | -        | -         | 1         | 8                 | 8         | 8         | 6         | 10        | 20         | 60         | 40          | 100        |
| <b>Total:</b> |             |             |  | <b>14</b>       | <b>-</b> | <b>12</b> | <b>19</b> | <b>40</b>         | <b>40</b> | <b>40</b> | <b>30</b> | <b>50</b> | <b>100</b> | <b>520</b> | <b>280</b>  | <b>800</b> |

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| Professional Elective-3/ MOOC-3                      | Professional Elective-4/ MOOC-4            | Audit Course-2   |
|--|--|--|
| P20DC203A: FPGA Based Wireless Communication Systems | P20DC204A: Multirate DSP for Communication | P20AC208A: Stress Management by Yoga                                 |
| P20DC203B: Advanced Embedded Systems                 | P20DC204B: RF Circuits                     | P20AC208B: Value Education   |
| P20DC203C: Fiber Optic Communication and Networks    | P20DC204C: Image and Video Processing      | P20AC208C: Personality Development through Life Enlightenment Skills |
| P20DC203D: MOOCs                                     | P20DC204D: MOOCs                           | P20AC208D: Disaster Management                                       |

**Total Contact Periods/Week: 24**

**Total Credits: 19**

*Note: The students shall undergo mandatory Industrial training/ Internship for at least 6 to 8 weeks during summer vacation at Industry/R&D organization. Internship evaluation will be done during the III semester.*

**Additional Learning: Students are advised to do MOOCs to bridge the gap in the curriculum as suggested in the DAC. The credits will be provided in the grade sheet.**



**SCHEME OF INSTRUCTION & EVALUATION FOR TWO YEAR POSTGRADUATE PROGRAMME**  
**M.TECH. (DIGITAL COMMUNICATIONS)**  
**SEMESTER-III**

| S. No. | Course Type | Course Code | Course Name  | Teaching scheme |   |    | Credits | Evaluation Scheme |     |    |     |       |     |       |    |     |             |
|--------|-------------|-------------|--|-----------------|---|----|---------|-------------------|-----|----|-----|-------|-----|-------|----|-----|-------------|
|        |             |             |  | L               | T | P  |         | CIE - TA          |     |    |     |       |     |       |    | ESE | Total Marks |
|        |             |             |  |                 |   |    |         | I <sup>2</sup> RE |     |    |     | Minor | MSE | Total |    |     |             |
|        |             |             |  |                 |   |    |         | ATLP              | CRP | CP | PPT |       |     |       |    |     |             |
| 1      | PE          | P20DC301    | Professional Elective-5/ MOOC-5  | 3               | - | -  | 3       | 8                 | 8   | 8  | 6   | 10    | 20  | 60    | 40 | 100 |             |
| 2      | OE          | P20OE302    | Open Elective/ MOOC-6  | 3               | - | -  | 3       | 8                 | 8   | 8  | 6   | 10    | 20  | 60    | 40 | 100 |             |
| 3      | PROJ        | P20DC303    | Dissertation Phase - I/Industrial Project<br><i>(to be continued in IV - Semester also as Dissertation Phase - II)</i> | -               | - | 18 | 9       | -                 | -   | -  | -   | -     | -   | 100   | -  | 100 |             |
| 4      | PROJ        | P20DC304    | Internship Evaluation  | -               | - | 2  | -       | -                 | -   | -  | -   | -     | -   | 100   | -  | 100 |             |
| Total: |             |             |  | 6               | - | 20 | 15      | 16                | 16  | 16 | 12  | 20    | 40  | 320   | 80 | 400 |             |

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| Professional Elective- 5                                       | Open Elective/ MOOC-6                              |
|--|--|
| P20DC301A: IoT and Communication Protocols                     | P20OE302A: Business Analytics                      |
| P20DC301B: Optimization techniques for Wireless Communications | P20OE302B: Industrial Safety                       |
| P20DC301C: VLSI Signal Processing                              | P20OE302C: Operations Research                     |
| P20DC301D: MOOCS   | P20OE302D: Cost Management of Engineering Projects |
|  | P20OE302E: Composite Materials                     |
|  | P20OE302F: Waste to Energy                         |
|  | P20OE302G: Renewable Energy Sources                |
|  | P20OE302H: MOOCS                                   |

**Total Contact Periods/Week: 26**

**Total Credits: 15**

**Additional Learning:** Students are advised to do MOOCs to bridge the gap in the curriculum as suggested in the DAC. The credits will be provided in the grade sheet.



Scheme of Instruction & Evaluation for Two Year Postgraduate Programme  
**M.Tech. (Digital Communications)**

**SEMESTER-IV**

| S. No. | Course Type | Course Code | Course Name             | Teaching scheme |   |    | Credits | Evaluation Scheme |     |    |     |       |     |     |             |       |
|--------|-------------|-------------|-------------------------|-----------------|---|----|---------|-------------------|-----|----|-----|-------|-----|-----|-------------|-------|
|        |             |             |                         | L               | T | P  |         | CIE - TA          |     |    |     |       |     | ESE | Total Marks |       |
|        |             |             |                         |                 |   |    |         | PRE               |     |    |     | Minor | MSE |     |             | Total |
|        |             |             |                         |                 |   |    |         | ATLP              | CRP | CP | PPT |       |     |     |             |       |
| 1      | PROJ        | P20DC401    | Dissertation Phase - II | -               | - | 30 | 15      | -                 | -   | -  | -   | -     | -   | 60  | 40          | 100   |
| Total: |             |             |                         | -               | - | 30 | 15      | -                 | -   | -  | -   | -     | -   | 60  | 40          | 100   |

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Total Contact Periods/Week: 30

Total Credits: 15

**COURSE CREDIT STRUCTURE COURSE WEIGHTAGE**

| Semester      | PRR-20 Curriculum | As per Model Curriculum |
|---------------|-------------------|-------------------------|
| I             | 19                | 18                      |
| II            | 19                | 18                      |
| III           | 15                | 16                      |
| IV            | 15                | 16                      |
| <b>Total:</b> | <b>68</b>         | <b>68</b>               |

| Courses             | % Weightage of Courses |
|---------------------|------------------------|
| Professional Theory | 42.85 % (9/21)         |
| Professional Lab    | 38.1 % (8/21)          |
| Other               | 19.05 % (4/21)         |
| <b>Total:</b>       | <b>100 % (21/21)</b>   |

**SEMESTER vs COURSE CATEGORY WEIGHTAGE**

Number of Courses / Number of Credits (*Course Category wise*)

| Semester                              | MC                       | PC                         | PE                         | OE                       | PROJ                       | AC                       | TOTAL                    |
|---------------------------------------|--------------------------|----------------------------|----------------------------|--------------------------|----------------------------|--------------------------|--------------------------|
| I                                     | 1/2                      | 4/10                       | 2/6                        | -                        | -                          | 1/1                      | 8/19                     |
| II                                    | -                        | 4/10                       | 2/6                        | -                        | 1/2                        | 1/1                      | 8/19                     |
| III                                   | -                        | -                          | 1/3                        | 1/3                      | 2/9                        | -                        | 4/15                     |
| IV                                    | -                        | -                          | -                          | -                        | 1/15                       | -                        | 1/15                     |
| <b>Total</b>                          | <b>1/2</b>               | <b>8/20</b>                | <b>5/15</b>                | <b>1/3</b>               | <b>4/26</b>                | <b>2/2</b>               | <b>21/68</b>             |
| <b>% Weightage of Course Category</b> | <b>2.94 %<br/>(2/68)</b> | <b>29.41 %<br/>(20/68)</b> | <b>22.05 %<br/>(15/68)</b> | <b>4.41 %<br/>(3/68)</b> | <b>38.23 %<br/>(26/68)</b> | <b>2.94 %<br/>(2/68)</b> | <b>100 %<br/>(68/68)</b> |