

# **Walchand College of Engineering, Sangli**

(An Autonomous Institute)



**Curriculum (Structure)**

**for**

**Information Technology**

**Academic Year 2016-2017**



**Walchand College of Engineering, Sangli**  
 (An Autonomous Institute)  
 Teaching and Evaluation Scheme for  
**Second Year UG Program in Information Technology**  
**I Semester (Effective from 2016-17)**

| Course Code          | Course                          | Teaching Scheme |   |   |         | Evaluation Scheme  |       |      |    |
|----------------------|---------------------------------|-----------------|---|---|---------|--|-------|------|----|
|                      |                                 | L               | T | P | Credits | Component  | Marks |      |    |
|                      |                                 |                 |   |   |         |  | Max   | Min. |    |
| 3MA 204              | Linear Algebra                  | 3               | 1 | - | 4       | ISE 1  | 10    | 20   | 40 |
|                      |                                 |                 |   |   |         | ISE 2  | 10    |      |    |
|                      |                                 |                 |   |   |         | MSE  | 30    |      |    |
|                      |                                 |                 |   |   |         | ESE  | 50    |      |    |
| 3IT 201              | Discrete Mathematics            | 3               | 1 | - | 4       | ISE 1  | 10    | 20   | 40 |
|                      |                                 |                 |   |   |         | ISE 2  | 10    |      |    |
|                      |                                 |                 |   |   |         | MSE  | 30    |      |    |
|                      |                                 |                 |   |   |         | ESE  | 50    |      |    |
| 3IT 202              | Data Structures                 | 3               | - | - | 3       | ISE 1  | 10    | 20   | 40 |
|                      |                                 |                 |   |   |         | ISE 2  | 10    |      |    |
|                      |                                 |                 |   |   |         | MSE  | 30    |      |    |
|                      |                                 |                 |   |   |         | ESE  | 50    |      |    |
| 3IT 203              | Microprocessors                 | 3               | - | - | 3       | ISE 1  | 10    | 20   | 40 |
|                      |                                 |                 |   |   |         | ISE 2  | 10    |      |    |
|                      |                                 |                 |   |   |         | MSE  | 30    |      |    |
|                      |                                 |                 |   |   |         | ESE  | 50    |      |    |
| 3IT 204              | Data Communication & Networking | 3               | - | - | 3       | ISE 1  | 10    | 20   | 40 |
|                      |                                 |                 |   |   |         | ISE 2  | 10    |      |    |
|                      |                                 |                 |   |   |         | MSE  | 30    |      |    |
|                      |                                 |                 |   |   |         | ESE  | 50    |      |    |
| 3IT 251<br>(3IT 252) | Data Structures Lab             | -               | - | 2 | 1       | ISE  | 50    | 20   | 20 |
|                      |                                 |                 |   |   |         | ESE POE  | 50    |      |    |
| 3IT 252              | Microprocessors Lab             | -               | - | 2 | 1       | ISE  | 50    | 20   | 20 |
|                      |                                 |                 |   |   |         | ESE POE  | 50    |      |    |
| 3IT 253<br>(3IT 255) | Programming Lab-I               | 2               | - | 2 | 3       | ISE  | 50    | 20   | 20 |
|                      |                                 |                 |   |   |         | ESE POE  | 50    |      |    |
| 3IT 241<br>(3IT 281) | Mini Project-I                  | -               | - | 2 | 1       | ISE  | 100   |      | 40 |
| Total                |                                 | 17              | 2 | 8 | 23      | Total Credits: 23<br>Total Contact Hours/Week:<br>27 hrs |       |      |    |

*Note: Course code in the bracket indicates pre-revised code*



**Walchand College of Engineering, Sangli**  
 (An Autonomous Institute)  
 Teaching and Evaluation Scheme for  
**Second Year UG Program in Information Technology**  
**II Semester (Effective from 2016-17)**

| Course Code          | Course                     | Teaching Scheme |   |   |         | Evaluation Scheme                                       |        |      |
|----------------------|----------------------------|-----------------|---|---|---------|---|--------|------|
|                      |                            |                 |   |   |         | Component   | Marks) |      |
|                      |                            | L               | T | P | Credits |   | Max.   | Min. |
| 3MA 215              | Fuzzy System & Application | 3               | - | - | 3       | ISE-I   | 10     | 40   |
|                      |                            |                 |   |   |         | ISE- II   | 10     |      |
|                      |                            |                 |   |   |         | MSE   | 30     |      |
|                      |                            |                 |   |   |         | ESE   | 50     |      |
| 3IT 221<br>(3IT 211) | Theory of computation      | 3               | 1 | - | 4       | ISE-I   | 10     | 40   |
|                      |                            |                 |   |   |         | ISE- II   | 10     |      |
|                      |                            |                 |   |   |         | MSE   | 30     |      |
|                      |                            |                 |   |   |         | ESE   | 50     |      |
| 3IT 222<br>(3IT 212) | Computer Architectures     | 2               | 1 | - | 3       | ISE-I   | 10     | 40   |
|                      |                            |                 |   |   |         | ISE- II   | 10     |      |
|                      |                            |                 |   |   |         | MSE   | 30     |      |
|                      |                            |                 |   |   |         | ESE   | 50     |      |
| 3IT 223<br>(3IT 213) | Computer Networks          | 3               | - | - | 3       | ISE-I   | 10     | 40   |
|                      |                            |                 |   |   |         | ISE- II   | 10     |      |
|                      |                            |                 |   |   |         | MSE   | 30     |      |
|                      |                            |                 |   |   |         | ESE   | 50     |      |
| 3HS 201              | Environmental Science      | 3               | - | - | 3       | ISE-I   | 10     | 40   |
|                      |                            |                 |   |   |         | ISE- II   | 10     |      |
|                      |                            |                 |   |   |         | MSE   | 30     |      |
|                      |                            |                 |   |   |         | ESE   | 50     |      |
| 3IT 21*              | Professional Elective I    | 2               | - | - | 2       | ISE-I   | 10     | 40   |
|                      |                            |                 |   |   |         | ISE- II   | 10     |      |
|                      |                            |                 |   |   |         | MSE   | 30     |      |
|                      |                            |                 |   |   |         | ESE   | 50     |      |
| 3IT 271<br>(3IT 263) | Computer network Lab       | -               | - | 2 | 1       | ISE   | 50     | 20   |
|                      |                            |                 |   |   |         | ESE POE   | 50     | 20   |
| 3IT 272<br>(3IT 265) | Programming Lab. -II       | 2               | - | 2 | 3       | ISE   | 50     | 20   |
|                      |                            |                 |   |   |         | ESE POE   | 50     | 20   |
| 3IT 242<br>(3IT 282) | Mini project-II            | -               | - | 4 | 2       | ISE   | 50     | 20   |
|                      |                            |                 |   |   |         | ESE POE   | 50     | 20   |
| Total                |                            | 18              | 2 | 8 | 24      | Total Credits: 24<br>Total Contact Hours/Week:<br>28hrs |        |      |

| Professional Elective- I |             |
|--------------------------|-------------|
| Course code              | Course Name |
| Data Structure II        | 3IT 231     |
| Robotics                 | 3IT 232     |

*Note: Course code in the bracket indicates pre-revised code*



**Walchand College of Engineering, Sangli**  
 (An Autonomous Institute)  
 Teaching and Evaluation Scheme for  
**Third Year UG Program in Information Technology**  
**Semester I (Effective from 2016-17)**

| Course Code  | Course                      | Teaching Scheme |   |   |         | Evaluation Scheme                                     |    |       |      |
|--------------|-----------------------------|-----------------|---|---|---------|---|----|-------|------|
|              |                             |                 |   |   |         | Scheme  |    | Marks |      |
|              |                             | L               | T | P | Credits |   |    | Max.  | Min. |
| 3OE 3**      | Open Elective- I            | 3               | - | - | 3       | ISE 1   | 10 | 20    | 40   |
|              |                             |                 |   |   |         | ISE 2   | 10 |       |      |
|              |                             |                 |   |   |         | MSE   | 30 |       |      |
|              |                             |                 |   |   |         | ESE   | 50 |       |      |
| 3IT 301      | Database Engineering        | 3               | - | - | 3       | ISE 1   | 10 | 20    | 40   |
|              |                             |                 |   |   |         | ISE 2   | 10 |       |      |
|              |                             |                 |   |   |         | MSE   | 30 |       |      |
|              |                             |                 |   |   |         | ESE   | 50 |       |      |
| 3IT 302      | Software Engineering Design | 2               | 1 | - | 3       | ISE 1   | 10 | 20    | 40   |
|              |                             |                 |   |   |         | ISE 2   | 10 |       |      |
|              |                             |                 |   |   |         | MSE   | 30 |       |      |
|              |                             |                 |   |   |         | ESE   | 50 |       |      |
| 3IT 303      | Operating System            | 3               | - | - | 3       | ISE 1   | 10 | 20    | 40   |
|              |                             |                 |   |   |         | ISE 2   | 10 |       |      |
|              |                             |                 |   |   |         | MSE   | 30 |       |      |
|              |                             |                 |   |   |         | ESE   | 50 |       |      |
| 3IT 304      | Computer Algorithm          | 3               | 1 | - | 4       | ISE 1   | 10 | 20    | 40   |
|              |                             |                 |   |   |         | ISE 2   | 10 |       |      |
|              |                             |                 |   |   |         | MSE   | 30 |       |      |
|              |                             |                 |   |   |         | ESE   | 50 |       |      |
| 2IT 30*      | Professional Elective- II   | 3               | - | - | 3       | ISE 1   | 10 | 20    | 40   |
|              |                             |                 |   |   |         | ISE 2   | 10 |       |      |
|              |                             |                 |   |   |         | MSE   | 30 |       |      |
|              |                             |                 |   |   |         | ESE   | 50 |       |      |
| 3IT 351      | Database Engineering Lab    | -               | - | 2 | 1       | ISE   | 50 | 20    | 20   |
|              |                             |                 |   |   |         | ESE POE   | 50 |       |      |
| 3IT 352      | Web Technology              | 1               | - | 2 | 2       | ISE   | 50 | 20    | 20   |
|              |                             |                 |   |   |         | ESE POE   | 50 |       |      |
| 3IT 341      | Mini-Project III*           | -               | - | 4 | 2       | ISE   | 50 | 20    | 20   |
|              |                             |                 |   |   |         | ESE POE   | 50 |       |      |
| <b>Total</b> |                             | 18              | 2 | 8 | 24      | Total Credits: 24<br>Total Contact Hours/Week: 28 hrs |    |       |      |

| Professional Elective- II                 |             |
|---|-------------|
| Course code                               | Course Name |
| Wireless Networks                         | 3IT 311     |
| Cloud Computing                           | 3IT 312     |
| Computer graphics & multimedia techniques | 3IT 313     |

| <b>Open Elective I:</b> |   |                              |
|-------------------------|---|------------------------------|
| <b>Course Code</b>      | <b>Course Name</b>                              | <b>Offered by Department</b> |
| 1OE 315 (3OE 302)       | Remote Sensing & GIS, GPS                       | Civil                        |
| 1OE 329 (3OE 304)       | Manufacturing Engineering                       | Mechanical                   |
| 1OE 330 (3OE 305)       | Energy Engineering                              | Mechanical                   |
| 1OE 331 (3OE 306)       | Mechanisms and Machines                         | Mechanical                   |
| 1OE 343 (3OE 307)       | Electrical Machines                             | Electrical                   |
| 1OE 357 (3OE 308)       | Electronic Systems                              | Electronics                  |
| 1OE 358 (3OE 311)       | Fundamental of Analog and Digital Communication | Electronics                  |
| 1OE 371 (3OE 309)       | Software Engg. & Database Essentials            | CSE                          |
| 1OE 385 (3OE 310)       | Internet of Things                              | IT                           |

*Note: Course code in the bracket indicates pre-revised code*



**Walchand College of Engineering, Sangli**  
 (An Autonomous Institute)  
 Teaching and Evaluation Scheme for  
**Third Year UG Program in Information Technology**  
**Semester II (Effective from 2016-17)**

| Course Code  | Course                         | Teaching Scheme |   |   |         | Evaluation Scheme  |         |      |    |
|--------------|--------------------------------|-----------------|---|---|---------|--|---------|------|----|
|              |                                | L               | T | P | Credits | Scheme   | (Marks) |      |    |
|              |                                |                 |   |   |         |  | Max.    | Min. |    |
| 3OE 3**      | Open Elective II               | 3               | - | - | 3       | ISE-I  | 10      | 20   | 40 |
|              |                                |                 |   |   |         | ISE- II  | 10      |      |    |
|              |                                |                 |   |   |         | MSE  | 30      |      |    |
|              |                                |                 |   |   |         | ESE  | 50      |      |    |
| 3IT 321      | Advanced Database Engineering  | 3               | - | - | 3       | ISE-I  | 10      | 20   | 40 |
|              |                                |                 |   |   |         | ISE- II  | 10      |      |    |
|              |                                |                 |   |   |         | MSE  | 30      |      |    |
|              |                                |                 |   |   |         | ESE  | 50      |      |    |
| 3IT 322      | Information Storage Management | 3               | - | - | 3       | ISE-I  | 10      | 20   | 40 |
|              |                                |                 |   |   |         | ISE- II  | 10      |      |    |
|              |                                |                 |   |   |         | MSE  | 30      |      |    |
|              |                                |                 |   |   |         | ESE  | 50      |      |    |
| 3IT 323      | Unix Operating System          | 3               | - | - | 3       | ISE-I  | 10      | 20   | 40 |
|              |                                |                 |   |   |         | ISE- II  | 10      |      |    |
|              |                                |                 |   |   |         | MSE  | 30      |      |    |
|              |                                |                 |   |   |         | ESE  | 50      |      |    |
| 3IT 324      | Information Theory             | 2               | 1 | - | 3       | ISE-I  | 10      | 20   | 40 |
|              |                                |                 |   |   |         | ISE- II  | 10      |      |    |
|              |                                |                 |   |   |         | MSE  | 30      |      |    |
|              |                                |                 |   |   |         | ESE  | 50      |      |    |
| 2IT 32*      | Professional Elective- III     | 3               | - | - | 3       | ISE-I  | 10      | 20   | 40 |
|              |                                |                 |   |   |         | ISE- II  | 10      |      |    |
|              |                                |                 |   |   |         | MSE  | 30      |      |    |
|              |                                |                 |   |   |         | ESE  | 50      |      |    |
| 3IT 371      | Unix Operating System Lab      | -               | - | 2 | 1       | ISE  | 50      | 20   |    |
|              |                                |                 |   |   |         | ESE POE  | 50      | 20   |    |
| 3IT 372      | Parallel Programming Lab       | 1               | - | 2 | 2       | ISE  | 50      | 20   |    |
|              |                                |                 |   |   |         | ESE POE  | 50      | 20   |    |
| 3IT 342      | Mini-Project IV*               | -               | - | 4 | 2       | ISE  | 50      | 20   |    |
|              |                                |                 |   |   |         | ESE POE  | 50      | 20   |    |
| <b>Total</b> |                                | 17              | 2 | 8 | 23      | Total Credits: 23<br>Total Contact Hours/Week:<br>27 hrs |         |      |    |

| Professional Elective- III   |             |
|------------------------------|-------------|
| Course code                  | Course Name |
| Machine Learning             | 3IT 331     |
| Virtualization Technology    | 3IT 332     |
| IOT: Systems and application | 3IT 333     |

| <b>Open Elective II:</b> |                                  |                              |
|--------------------------|----------------------------------|------------------------------|
| <b>Course Code</b>       | <b>Course Name</b>               | <b>Offered by Department</b> |
| 1OE 308 (3OE 321)        | Machine Foundations              | Civil-APM                    |
| 1OE 309 (3OE 322)        | Theory of Structures             | Civil-APM                    |
| 1OE 336 (3OE 324)        | Power Plant Engineering          | Mechanical                   |
| 1OE 337 (3OE 325)        | Fabrication Technology           | Mechanical                   |
| 1OE 338 (3OE 326)        | Mechanical Power Transmission    | Mechanical                   |
| 1OE 350 (3OE 327)        | Renewable Energy                 | Electrical                   |
| 1OE 364 (3OE 328)        | Embedded Programming             | Electronics                  |
| 1OE 365 (3OE 331)        | Signal Processing and Foundation | Electronics                  |
| 1OE 378 (3OE 329)        | Data Analytics                   | CSE                          |
| 1OE 392 (3OE 330)        | Web Design & Applications        | IT                           |

*Note: Course code in the bracket indicates pre-revised code*



**Walchand College of Engineering, Sangli**  
 (An Autonomous Institute)  
 Teaching and Evaluation Scheme for  
 Final Year UG Program in Information Technology  
 Semester I (Effective from 2016-17)

| Course Code | Course                                    | Teaching Scheme |   |   |         | Evaluation Scheme                                       |       |      |    |
|-------------|---|-----------------|---|---|---------|---|-------|------|----|
|             |   | L               | T | P | Credits | Scheme  | Marks |      |    |
|             |   |                 |   |   |         |   | Max.  | Min. |    |
| IE          | Open Elective III                         | 3               | - | - | 3       | ISE-I   | 10    |      | 40 |
|             |   |                 |   |   |         | ISE- II   | 10    |      |    |
|             |   |                 |   |   |         | MSE   | 30    |      |    |
|             |   |                 |   |   |         | ESE   | 50    | 20   |    |
| 2IC 401     | Engineering Economics and Business Ethics | 3               | 1 | - | 4       | ISE-I   | 10    |      | 40 |
|             |   |                 |   |   |         | ISE- II   | 10    |      |    |
|             |   |                 |   |   |         | MSE   | 30    |      |    |
|             |   |                 |   |   |         | ESE   | 50    | 20   |    |
| 2IT 401     | Cryptography & Network Security           | 2               | 1 | - | 3       | ISE-I   | 10    |      | 40 |
|             |   |                 |   |   |         | ISE- II   | 10    |      |    |
|             |   |                 |   |   |         | MSE   | 30    |      |    |
|             |   |                 |   |   |         | ESE   | 50    | 20   |    |
| 2IT 402     | Data Mining                               | 3               | - | - | 3       | ISE-I   | 10    |      | 40 |
|             |   |                 |   |   |         | ISE- II   | 10    |      |    |
|             |   |                 |   |   |         | MSE   | 30    |      |    |
|             |   |                 |   |   |         | ESE   | 50    | 20   |    |
| 2IT 4**     | Professional Elective- IV                 | 3               | - | - | 3       | ISE-I   | 10    |      | 40 |
|             |   |                 |   |   |         | ISE- II   | 10    |      |    |
|             |   |                 |   |   |         | MSE   | 30    |      |    |
|             |   |                 |   |   |         | ESE   | 50    | 20   |    |
| 2IT 455     | Open Source S/W Lab                       | 2               | - | 2 | 3       | ISE   | 50    | 20   |    |
|             |   |                 |   |   |         | ESE (POE)   | 50    | 20   |    |
| 2IT 456     | Software Testing & Quality Analysis Lab   | 2               | - | 2 | 3       | ISE   | 50    | 20   |    |
|             |   |                 |   |   |         | ESE (POE)   | 50    | 20   |    |
| 2IT 452     | Data Mining Lab                           | -               | - | 2 | 1       | ISE   | 50    | 20   |    |
|             |   |                 |   |   |         | ESE (POE)   | 50    | 20   |    |
| 2IT 481     | Pre Project Work                          | -               | - | 2 | 1       | ISE   | 100   | 40   |    |
| Total       |   | 18              | 2 | 8 | 24      | Total Credits: 24<br>Total Contact Hours/Week:<br>28hrs |       |      |    |

Note: 1. Contact hours of 2 with Guide for Seminar for a batch of 9 students



| Professional Elective- IV        |         |
|----------------------------------|---------|
| High Performance Computing       | 2IT 403 |
| Mobile Ad-hoc Networks & Sensors | 2IT 404 |
| Artificial Intelligence          | 2IT 407 |
| Digital Image Processing         | 2IT 409 |

| Open Elective III |   |                       |
|-------------------|---|-----------------------|
| Course Code       | Course Name                                   | Offered by Department |
| 1OE 415 (3OE 341) | Numerical Methods and Optimization Techniques | Civil                 |
| 1OE 429 (3OE 342) | Automobile Engineering                        | Mechanical            |
| 1OE 430 (3OE 343) | Energy Modeling and Management                | Mechanical            |
| 1OE 431 (3OE 344) | Aerospace Engineering                         | Mechanical            |
| 1OE 443 (3OE 345) | Industrial Automation                         | Electrical            |
| 1OE 457 (3OE 346) | Cyber Physical Systems                        | Electronics           |
| 1OE 471 (3OE 347) | Business Intelligence                         | CSE                   |
| 1OE 472           | Ethical Hacking and Cyber Security            | CSE                   |
| 1OE 485 (3OE 348) | Data Visualization and Interpretation         | IT                    |

*Note: Course code in the bracket indicates pre-revised code*



**Walchand College of Engineering, Sangli**  
 (An Autonomous Institute)  
 Teaching and Evaluation Scheme for  
 Final Year UG Program in Information Technology  
 Semester II (Effective from 2016-17)

| Course Code | Course                   | Teaching Scheme |   |   |         | Evaluation Scheme                                    |       |      |
|-------------|--------------------------|-----------------|---|---|---------|--|-------|------|
|             |                          |                 |   |   |         | Scheme   | Marks |      |
|             |                          | L               | T | P | Credits |  | Max.  | Min. |
| 2IT 4**     | Professional Elective- V | 3               | - | - | 3       | ISE-I  | 10    | 40   |
|             |                          |                 |   |   |         | ISE- II  | 10    |      |
|             |                          |                 |   |   |         | MSE  | 30    |      |
|             |                          |                 |   |   |         | ESE  | 50    | 20   |
| 2IT 482     | Project Work             | -               | - | 8 | 12      | ISE  | 50    | 20   |
|             |                          |                 |   |   |         | ESE (OE)   | 50    | 20   |
| Total       |                          | 03              | - | 8 | 15      | Total Credits: 15<br>Total Contact Hours/Week: 11hrs |       |      |

**Note:** Contact hours for faculty is 8 hrs/week for the batch of 9 students

**Professional Elective V:**

| Elective - V                    |         |
|---------------------------------|---------|
| Soft Computing                  | 2IT 414 |
| Geographical Information System | 2IT 415 |
| Business Intelligence           | 2IT 416 |
| Visual Computing                | 2IT 418 |