

# ENGINEERING PHYSICS

## 100 LEVEL FIRST SEMESTER CURRENT CURRICULUM

| Code              | Title   | L | T | P | CU | Prerequisite |
|-------------------|---|---|---|---|----|--------------|
| PHY 183           | Introductory Mechanics & Properties of Matter | 2 | 1 | 0 | 3  |              |
| PHY184            | Intro. Heat, Wave motion & Sound              | 2 | 1 | 0 | 3  |              |
| PHY171            | Basic Experimental physics I                  | 0 | 0 | 3 | 1  |              |
| MTH111            | Elementary Algebra I                          | 2 | 1 | 0 | 3  |              |
| MTH 112           | Calculus I                                    | 2 | 1 | 0 | 3  |              |
| MTH113            | Geometry                                      | 2 | 1 | 0 | 3  |              |
| CHM101            | Foundation Chemistry                          | 2 | 1 | 3 | 4  |              |
| GNS101            | Use of English I                              | 2 | 0 | 0 | 2  |              |
| <b>TOTAL = 22</b> |   |   |   |   |    |              |

## 100 LEVEL SECOND SEMESTER CURRENT CURRICULUM

| Code   | Title                         | L | T | P | CU | Prerequisite |
|--------|-------------------------------|---|---|---|----|--------------|
| PHY188 | Intro. Electricity & Magn.    | 2 | 1 | 0 | 3  |              |
| PHY189 | Intro. Optics & Modern Phy.   | 2 | 1 | 0 | 3  |              |
| PHY172 | Basic Experimental Physics II | 0 | 0 | 3 | 1  |              |
| MTH121 | Elementary Algebra II         | 2 | 1 | 0 | 3  |              |
| MTH122 | Calculus II                   | 2 | 1 | 0 | 3  |              |
| MTH123 | Elementary Theory of sets     | 2 | 1 | 0 | 3  |              |

|        |            |   |   |  |   |  |
|--------|------------|---|---|--|---|--|
| CHM102 | Foundation | 2 | 1 |  | 4 |  |
|--------|------------|---|---|--|---|--|

|                 |                   |   |   |   |   |  |
|-----------------|-------------------|---|---|---|---|--|
|                 | Chemistry         |   |   |   |   |  |
| GNS102          | Use of English II | 2 | 0 | 0 | 2 |  |
| <b>TOTAL 22</b> |                   |   |   |   |   |  |

| <b>200 LEVEL FIRST SEMESTER CURRENT CURRICULUM</b> |                         |          |          |                      |           |                     |
|--|-------------------------|----------|----------|----------------------|-----------|---------------------|
| <b>Code</b>  | <b>Title</b>            | <b>L</b> | <b>T</b> | <b>P</b>             | <b>CU</b> | <b>Prerequisite</b> |
| PHY202   | Intermediate Mechanics  | 3        | 1        | 0                    | 4         | PHY183              |
| PHY222   | Heat and Thermodynamic  | 2        | 1        | 0                    | 3         | PHY184              |
| MTH212:  | Mathematical Method I   | 2        | 1        | 0                    | 3         | MTH122              |
| CS 232   | Introd. Computer Sci. I | 2        | 1        | 0                    | 3         |                     |
| GNS201   | Information Science     | 2        | 0        | 0                    | 2         |                     |
| CE 211   | Strength of Materials I | 1        | 1        | 0                    | 2         |                     |
| EE 211   | Electrical Engineering  | 2        | 1        | 0                    | 2         |                     |
|  | Fundamentals I          | 1        | 1        | 0                    | 2         |                     |
| ME 211   | Engineering Mechanics I | 2        | 0        | 0                    | 2         |                     |
| GNS101   | Use of English I        | 2        | 0        | 0                    | 2         |                     |
| TOTAL =23/25                                       |                         |          |          | *GNS 101 for DE only |           |                     |

| <b>200 LEVEL SECOND SEMESTER CURRENT CURRICULUM</b> |  |          |          |          |           |                     |
|---|--|----------|----------|----------|-----------|---------------------|
| <b>Code</b>   | <b>Title</b>                           | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
| PHY242  | Atomic Physics I                       | 2        | 1        | 0        | 3         | PHY189              |
| PHY282  | Mathematical Methods for Physics I     | 2        | 1        | 0        | 3         | -                   |
| GNS202  | Nig. History & Culture                 | 2        | 0        | 0        | 2         | -                   |
| GNS 222   | Peace and Conflict Resolution Studies  | 2        | 0        | 0        | 2         | -                   |
| GNS 102   | Use of English II                      | 2        | 0        | 0        | 2         | -                   |
| CE 222  | Strength of Materials II               | 1        | 1        | 0        | 2         | CE211               |
| CE 223  | Fluid Mechanics                        | 1        | 1        | 0        | 2         | -                   |
| EE 222  | Electrical Engineering Fundamentals II | 2        | 1        | 0        | 3         | EE211               |
| ME 222  | Engineering Mechanics II               | 1        | 1        | 0        | 2         | EE211               |
| ME 225  | Workshop Practice II                   | 0        | 0        | 3        | 1         | -                   |
| ME 205  | Material Science                       | 1        | 1        | 0        | 2         | -                   |

|               |                         |   |   |   |   |       |
|---------------|-------------------------|---|---|---|---|-------|
| ME 223        | Engineering Drawings II | 1 | 0 | 1 | 1 | EE211 |
| TOTAL = 23/25 |                         |   |   |   |   |       |

| <b>300 LEVEL FIRST SEMESTER CURRENT CURRICULUM</b> |                                    |          |          |          |                |                     |
|--|------------------------------------|----------|----------|----------|----------------|---------------------|
| <b>Code</b>  | <b>Title</b>                       | <b>L</b> | <b>T</b> | <b>P</b> | <b>C<br/>U</b> | <b>Prerequisite</b> |
| PHY303   | Analytical Mechanics               | 2        | 1        | 0        | 3              | PHY202, MTH222      |
| PHY342   | Atomic Physics II                  | 2        | 1        | 0        | 3              | PHY242,             |
| GNS301:  | Science, Tech & Society            | 2        | 0        | 0        | 2              | -                   |
| EA 413   | Computer Programming for Engineers | 1        | 0        | 1        | 2              | CS231               |
| <i>T OTAL = 19(CE)/20(EE)/17(ME)</i>               |                                    |          |          |          |                |                     |

| <b>300 LEVEL SECOND SEMESTER CURRENT CURRICULUM</b> |   |          |          |          |           |                     |
|---|---|----------|----------|----------|-----------|---------------------|
| <b>Code</b>   | <b>Title</b>                            | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
| PHY311  | Analytical Mechanics                    | 2        | 1        | 0        | 3         | PHY211, MTH222      |
| PHY314:   | Atomic Physics II                       | 2        | 1        | 0        | 3         | PHY221              |
| GNS301:   | <b>Entrepreneurship and Innovations</b> | 2        | 0        | 0        | 2         | -                   |
| EA 413  | Computer Programming for Engineers      | 1        | 0        | 1        | 2         | CS231               |
| <b>T OTAL = 19(CE)/20(EE)/17(ME)</b>                |   |          |          |          |           |                     |



**Electives for Civil (Minimum of 6 units to be chosen)**

| Code  | Title                        | L | T | P | CU | Prerequisite |
|-------|------------------------------|---|---|---|----|--------------|
| CE322 | Structural Analysis II       | 1 | 1 | 0 | 2  | CE311        |
| CE323 | Fluid Dynamics & Hydro       | 1 | 1 | 3 | 3  | CE223        |
| CE326 | Soil Mechanics               | 1 | 1 | 3 | 2  | CE316        |
| CE324 | Reinforced Concrete Design I | 1 | 1 | 3 | 3  |              |
| CE318 | Engineering Geology          | 1 | 1 | 3 | 2  |              |

**Electives for Electrical (Minimum of 7 units to be chosen including EE327)**

| Code    | Title                               | L | T | P | CU | Prerequisite |
|---------|-------------------------------------|---|---|---|----|--------------|
| EE 321  | Electrical Machines I               | 3 | 1 | 0 | 4  |              |
| EE 322  | Digital Electronics                 | 2 | 1 | 0 | 3  | EE222        |
| EE 324: | Electromagnetic Fields and Waves II | 2 | 1 | 0 | 3  | EE313        |
| EE 327  | Measurement & Instrumentation       | 0 | 0 | 3 | 1  | EE317        |

| <b>Electives for Mechanical (Minimum of 6 units to be chosen including EE327)</b> |                                   |          |          |          |           |                     |
|---|-----------------------------------|----------|----------|----------|-----------|---------------------|
| <b>Code</b>   | <b>Title</b>                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
| ME 321  | Dynamics of Machinery II          | 1        | 1        | 0        | 2         | ME311               |
| ME 322  | Heat Transfer II                  | 2        | 0        | 0        | 2         | ME312               |
| ME 323  | Compressible Fluid Flow           | 2        | 0        | 0        | 2         | ME312               |
| ME 324  | Production Technology I           | 1        | 1        | 0        | 2         |                     |
| EA 321  | Topics in Engineering Mathematics | 2        | 0        | 0        | 2         | ME322               |

**400 Level IT FIRST and SECOND Semester 8 Units**

| <b>500 LEVEL FIRST SEMESTER CURRENT CURRICULUM</b> |                      |          |          |          |           |                     |
|--|----------------------|----------|----------|----------|-----------|---------------------|
| <b>Code</b>  | <b>Title</b>         | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
| PHY599   | Research Project     | 0        | 0        | 0        | 0         |                     |
| PHY533   | Quantum Mechanics II | 2        | 1        | 0        | 3         |                     |
| PHY522   | Statistical Physics  | 3        | 1        | 0        | 3         |                     |
| PHY337   | Numerical Analysis   | 2        | 1        | 0        | 3         |                     |
| TOTAL = 15(CE)/16(EE and ME)                       |                      |          |          |          |           |                     |

| <b>Electives for Civil (Minimum of 6 units to be chosen)</b> |  |          |          |          |           |                     |
|--|--|----------|----------|----------|-----------|---------------------|
| <b>Code</b>  | <b>Title</b>                                   | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
| CE 406   | Irrigation & Drainage                          | 1        | 1        | 0        | 2         |                     |
| CE 501   | Hydraulic Engineering Structures and Systems I | 1        | 1        | 3        | 3         |                     |
| CE 502   | Foundation Engineering                         | 1        | 2        | 0        | 3         | CE313               |
| CE 503   | Sanitary Engineering                           | 1        | 1        | 3        | 3         | CE305               |
| CE 521   | Advanced Structural Design                     | 1        | 1        | 3        | 3         | CE309               |

| <b>Electives for Civil (Minimum of 6 units to be chosen)</b> |  |          |          |          |           |                     |
|--|--|----------|----------|----------|-----------|---------------------|
| <b>Code</b>  | <b>Title</b>                                   | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
| <b>CE 411</b>  | Irrigation & Drainage                          | 1        | 1        | 0        | 2         |                     |
| <b>CE 511</b>  | Hydraulic Engineering Structures and Systems I | 1        | 1        | 3        | 3         |                     |
| <b>CE 512</b>  | Foundation Engineering                         | 1        | 2        | 0        | 3         | <b>CE316</b>        |
| <b>CE 515</b>  | Sanitary Engineering                           | 1        | 1        | 3        | 3         | CE305               |
| <b>CE 418</b>  | <b>Civil Engineering Practice</b>              | <b>1</b> | <b>1</b> | <b>3</b> | <b>3</b>  |                     |

**Electives for Electrical (Minimum of 7 units to be chosen)**

| <b>Code</b> | <b>Title</b>           | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
|-------------|------------------------|----------|----------|----------|-----------|---------------------|
| ME 411      | Meteorology            | 1        | 1        | 0        | 2         |                     |
| ME 412      | Automatic Control I    | 2        | 1        | 0        | 3         | MTH 222             |
| ME 316      | Machine Design I       | 2        | 1        | 3        | 4         |                     |
| ME 415      | Engineering Metallurgy | 1        | 1        | 0        | 2         |                     |

| <b>Code</b> | <b>Title</b>                              | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
|-------------|---|----------|----------|----------|-----------|---------------------|
| EE 413      | Digital Systems                           | 1        | 0        | 1        | 3         |                     |
| EE 503      | Electrical Machines II                    | 2        | 0        | 0        | 2         | EE321               |
| EE 504      | High Voltage Engineering                  | 2        | 0        | 0        | 2         |                     |
| EE 506      | Digital Data Transmission                 | 2        | 0        | 0        | 2         |                     |
| EE 508      | Microwave Engineering                     | 2        | 0        | 0        | 2         | EE324               |
| EE 411      | Control Engineering I                     | 2        | 1        | 0        | 3         | EE311               |
| EE 414      | Analogue Circuit Design                   | 2        | 0        | 0        | 2         | EE312               |
| EE 511      | Computer Aided System Analysis and Design | 2        | 1        | 0        | 3         |                     |
| EE 525      | Digital Data Processing                   | 2        | 0        | 0        | 2         | EE311               |
| EE531       | Computer System and Simulation            | 2        | 0        | 0        | 2         |                     |

|        |   |   |   |   |   |        |
|--------|---|---|---|---|---|--------|
| ME 512 | Engineering Mechanics Section and Economy | 2 | 1 | 0 | 3 |        |
| ME 551 | Energy Studies                            | 1 | 1 | 0 | 2 |        |
| ME 552 | Internal Combustion Engines               | 1 | 1 | 0 | 2 | ME 323 |

**Electives for Mechanical (Minimum of 7 units to be chosen)**

| <b>500 LEVEL SECOND SEMESTER CURRENT CURRICULUM</b> |                           |          |          |          |           |                     |
|---|---------------------------|----------|----------|----------|-----------|---------------------|
| <b>Code</b>   | <b>Title</b>              | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
| PHY561  | Nuclear & Particle Phy II | 3        | 1        | 0        | 4         |                     |
| PHY551  | Solid State Physics II    | 2        | 1        | 0        | 3         |                     |
| PHY599  | Research Project          | 0        | 0        | 0        | 6         |                     |
| TOTAL = 19(EE and ME)/20(CE)                        |                           |          |          |          |           |                     |

| <b>Electives for Civil (Minimum of 7 units to be chosen)</b> |  |          |          |          |           |                     |
|--|--|----------|----------|----------|-----------|---------------------|
| <b>Code</b>  | <b>Title</b>                                   | <b>L</b> | <b>T</b> | <b>P</b> | <b>CU</b> | <b>Prerequisite</b> |
| CE 522   | Design of Hydraulics Structures and Systems II | 1        | 1        | 0        | 2         | CE501               |
| CE 526   | Sanitary Engineering Water Supply and Disposal | 1        | 0        | 3        | 2         | CE305               |
| CE541  | Advanced Foundation Engineering                | 1        | 1        | 3        | 2         | CE502               |
| CE515  | Industrial Electronics                         | 2        | 0        | 0        | 2         | EE312               |