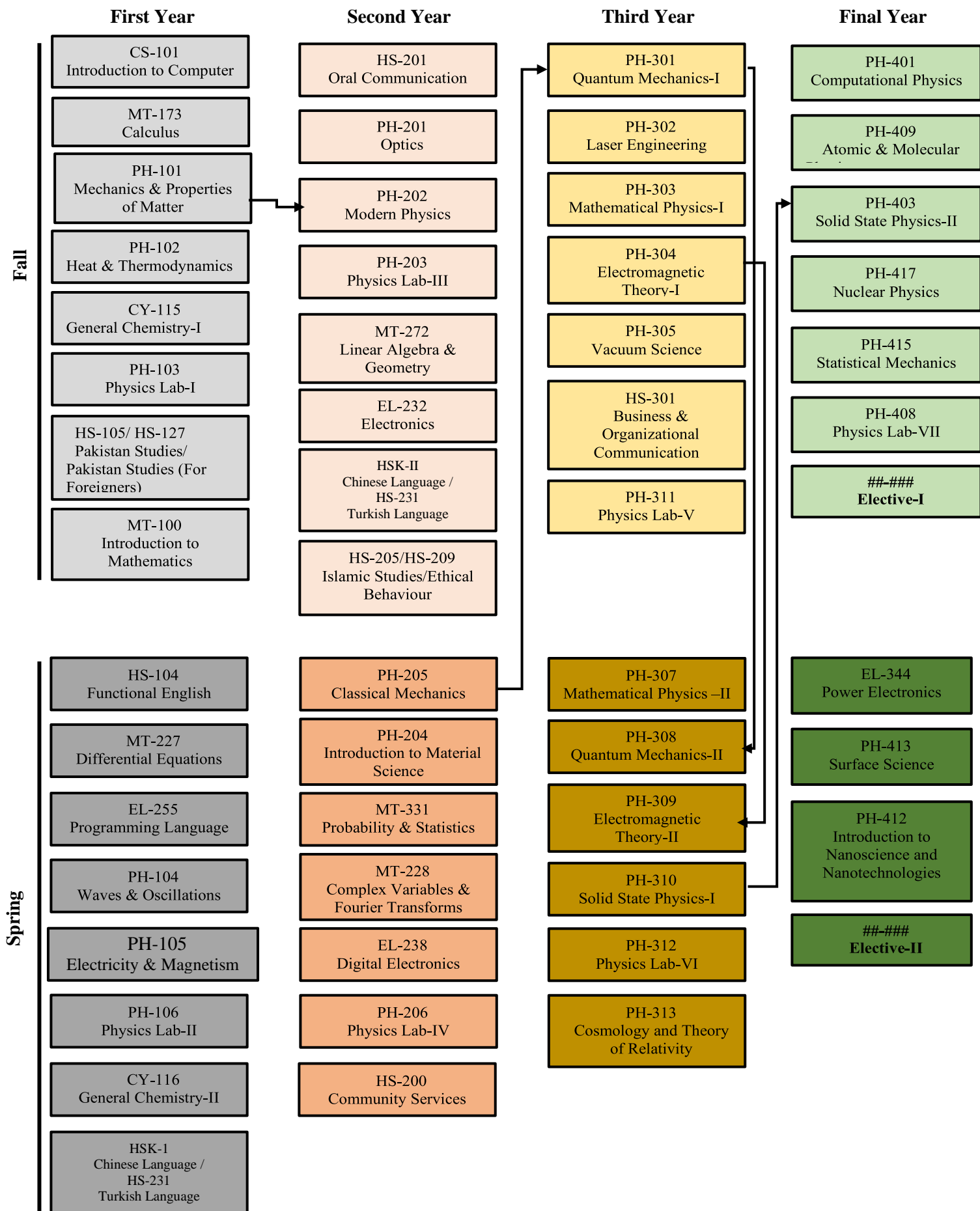


# Course Dependency Chart (BSAP)

For Batch 2019 onwards



## BS APPLIED PHYSICS BATCH 2022 ONWARD

### FIRST YEAR

| Fall Semester          |  |              |    |           | Spring Semester      |  |              |    |           |
|------------------------|--|--------------|----|-----------|----------------------|--|--------------|----|-----------|
| Course Code            | Course Title   | Credit Hours |    |           | Course Code          | Course Title                           | Credit Hours |    |           |
|                        |  | Th           | Pr | Total     |                      |  | Th           | Pr | Total     |
| HS-105<br>OR<br>HS-127 | Pakistan Studies OR<br>Pakistan Studies (For Foreigners) | 2            | 0  | 2         | HS-104               | Functional English                     | 3            | 0  | 3         |
| CS-101                 | Introduction to Computer                                 | 2            | 1  | 3         | MT-227               | Differential Equations                 | 3            | 0  | 3         |
| MT-173                 | Calculus   | 3            | 0  | 3         | EL-255               | Programming Language                   | 2            | 1  | 3         |
| PH-101                 | Mechanics & Properties of Matter                         | 3            | 0  | 3         | PH-104               | Waves & Oscillations                   | 2            | 0  | 2         |
| PH-102                 | Heat & Thermodynamics                                    | 2            | 0  | 2         | PH-105               | Electricity & Magnetism                | 3            | 0  | 3         |
| CY-115                 | General Chemistry-I                                      | 2            | 1  | 3         | PH-106               | Physics Lab-II                         | 0            | 1  | 1         |
| PH-103                 | Physics Lab-I  | 0            | 1  | 1         | CY-116               | General Chemistry-II                   | 2            | 1  | 3         |
| MT-100                 | Introduction to Mathematics                              | 0            | 0  | NC        | HSK-I /HS231         | Chinese Language /<br>Turkish Language | -            | -  | NC        |
| <b>TOTAL CREDITS</b>   |  |              |    | <b>17</b> | <b>TOTAL CREDITS</b> |  |              |    | <b>18</b> |

### SECOND YEAR

| Fall Semester          |   |              |    |           | Spring Semester      |   |              |    |           |
|------------------------|---|--------------|----|-----------|----------------------|---|--------------|----|-----------|
| Course Code            | Course Title                            | Credit Hours |    |           | Course Code          | Course Title                              | Credit Hours |    |           |
|                        |   | Th           | Pr | Total     |                      |   | Th           | Pr | Total     |
| HS-205<br>OR<br>HS-209 | Islamic Studies OR<br>Ethical Behaviour | 2            | 0  | 2         | PH-205               | Classical Mechanics                       | 3            | 0  | 3         |
| HS-201                 | Oral Communication                      | 2            | 1  | 3         | PH-204               | Introduction to Material<br>Science       | 3            | 0  | 3         |
| PH-201                 | Optics                                  | 2            | 0  | 2         | MT-331               | Probability & Statistics                  | 3            | 0  | 3         |
| PH-202                 | Modern Physics                          | 3            | 0  | 3         | MT-228               | Complex Variables & Fourier<br>Transforms | 3            | 0  | 3         |
| PH-203                 | Physics Lab-III                         | 0            | 1  | 1         | EL-238               | Digital Electronics                       | 3            | 1  | 4         |
| MT-272                 | Linear Algebra & Geometry               | 3            | 0  | 3         | PH-206               | Physics Lab-IV                            | 0            | 1  | 1         |
| EL-232                 | Electronics                             | 3            | 1  | 4         | HS-200               | Community Services                        | 0            | 0  | NC        |
| HSK-II /<br>HS231      | Chinese Language /<br>Turkish Language  | -            | -  | NC        |                      |   |              |    |           |
| <b>TOTAL CREDITS</b>   |   |              |    | <b>18</b> | <b>TOTAL CREDITS</b> |   |              |    | <b>17</b> |

### THIRD YEAR

| Fall Semester        |  |              |    |           | Spring Semester      |                                       |              |    |           |
|----------------------|--|--------------|----|-----------|----------------------|---------------------------------------|--------------|----|-----------|
| Course Code          | Course Title                               | Credit Hours |    |           | Course Code          | Course Title                          | Credit Hours |    |           |
|                      |  | Th           | Pr | Total     |                      |                                       | Th           | Pr | Total     |
| PH-301               | Quantum Mechanics-I                        | 3            | 0  | 3         | PH-307               | Mathematical Physics –II              | 3            | 0  | 3         |
| PH-302               | Laser Engineering                          | 3            | 0  | 3         | PH-308               | Quantum Mechanics-II                  | 3            | 0  | 3         |
| PH-303               | Mathematical Physics-I                     | 3            | 0  | 3         | PH-309               | Electromagnetic Theory-II             | 3            | 0  | 3         |
| PH-304               | Electromagnetic Theory-I                   | 3            | 0  | 3         | PH-310               | Solid State Physics-I                 | 3            | 0  | 3         |
| PH-305               | Vacuum Science                             | 2            | 0  | 2         | PH-312               | Physics Lab-VI                        | 0            | 1  | 1         |
| HS-301               | Business & Organizational<br>Communication | 3            | 0  | 3         | PH-313               | Cosmology and Theory of<br>Relativity | 3            | 0  | 3         |
| PH-311               | Physics Lab-V                              | 0            | 1  | 1         |                      |                                       |              |    |           |
| <b>TOTAL CREDITS</b> |  |              |    | <b>18</b> | <b>TOTAL CREDITS</b> |                                       |              |    | <b>16</b> |

| FINAL YEAR                      |                            |              |    |           |                 |  |              |     |           |
|---------------------------------|----------------------------|--------------|----|-----------|-----------------|--|--------------|-----|-----------|
| Fall Semester                   |                            |              |    |           | Spring Semester |  |              |     |           |
| Course Code                     | Course Title               | Credit Hours |    |           | Course Code     | Course Title                                     | Credit Hours |     |           |
|                                 |                            | Th           | Pr | Total     |                 |  | Th           | Pr  | Total     |
| PH-401                          | Computational Physics      | 2            | 0  | 2         | ##-##           | Elective-2                                       | 3/2          | 0/1 | 3         |
| PH-409                          | Atomic & Molecular Physics | 2            |    | 2         | EL-344          | Power Electronics                                | 3            | 1   | 4         |
| PH-403                          | Solid State Physics-II     | 3            | 0  | 3         | PH-407          | Applied Physics Project                          | 0            | 3   | 3         |
| PH-417                          | Nuclear Physics            | 2            | 0  | 2         | PH-413          | Surface Science                                  | 2            | 0   | 2         |
| PH-415                          | Statistical Mechanics      | 2            | 0  | 2         | PH-412          | Introduction to Nanoscience and Nanotechnologies | 2            | 0   | 2         |
| ##-##                           | Elective-1                 | 3            | 1  | 4         |                 |  |              |     |           |
| PH-407                          | *Applied Physics Project   | 0            | 3  | 3         |                 |  |              |     |           |
| PH-408                          | Physics Lab-VII            | 0            | 1  | 1         |                 |  |              |     |           |
|                                 | <b>TOTAL CREDITS</b>       |              |    | <b>19</b> |                 | <b>TOTAL CREDITS</b>                             |              |     | <b>14</b> |
| <b>Total Credit Hours = 137</b> |                            |              |    |           |                 |  |              |     |           |

\* Duration one academic year: Requires literature survey and preliminary work during this Semester

| ELECTIECOURSES                               |              |
|--|--------------|
| MATERIALS GROUP                              | Credit Hours |
| MM- 401 Material Characterization Techniques | 3+1          |
| MY-402 Advance Materials                     | 3+0          |
| ELECTRONICS GROUP                            |              |
| EI-484 Optoelectronics and Microwave Systems | 3+1          |
| EL-333 Integrated Circuits                   | 2+1          |
| SPACE GROUP                                  |              |
| PH-416 Space Physics                         | 3+1          |
| PH-411 Applications of Space Physics         | 3+0          |