**Centurion University of Technology and Management**

**School of Applied Sciences**

**Department of Physics**

## Program Objectives

1.To expand scientific temper and can prove to be more beneficial for the society as the scientific developments can make a nation or society to grow at a rapid pace.

2. To obtain a professional job as scientist ,researcher ,entrepreneur and to get jobs in marketing, business &other technical fields.

POs; Science Graduates will be able to;

| POs | Outcomes |
|---|---|
| PO1 | Apply mathematics, science, fundamentals and specialization to the conceptualization of different scientific models |
| PO2 | Identify, formulate, research literature and solve complex science related problems reaching substantiated conclusions using first principles of mathematics and applied sciences |
| PO3 | Design solutions for complex scientific problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations |
| PO4 | Conduct investigations of complex problems including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions |
| PO5 | Create, select and apply appropriate techniques, resources, and modern engineering tools, including prediction and modeling, to complex scientific activities, with an understanding of the limitations |
| PO6 | Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings |
| PO7 | Communicate effectively on complex science activities with the science community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions |
| PO8 | Demonstrate understanding of the societal, health, safety, legal and cultural issues andthe consequent responsibilities relevant to scientific application |
| PO9 | Understand and commit to professional ethics and responsibilities and norms of engineering practice |
| PO10 | Understand the impact of science solutions in a societal context and demonstrate knowledge of and need for sustainable development |

| | |
|---|---|
| PO11 | Recognize the need for, and have the ability to engage in independent and life-long learning |
| PO12 | Demonstrate a knowledge and understanding of contemporary technologies, their applications and limitations, contemporary research in the broader context of relevant fields |
| PO13 | Demonstrate the ability to succeed in national and international competitive events in therelevant fields |

**PSOs: Department of Physics**

**PSO1.** Provide knowledge about material properties and its application for developing technology to ease the problems related to the society. Applied course will enable them to be suitable for various fields.

**PSO2.**Understood the basic concepts, fundamental principles and the scientific theories related to various phenomena of Physics and their relevancies in the day-to-day life.

**PSO3.** Learn the concepts as Classical Mechanics, Solid State Physics, Quantum Mechanics, Relativity, Nuclear and Particle Physics, Electronics etc. Analyze the applications of mathematics to the problems in physics & develop suitable mathematical method for such application & for formulation of physical theories.

**COs:**

| **COs** | **Skills** |
|---|---|
| CO1 | Knowledge |
| CO2 | Observe, Classify, Quantify, Interpret and Communicate |
| CO3 | Investigation and Judgements |
| CO4 | Problem Solving |
| CO5 | Leadership & Entrepreneurship |
| CO6 | Product/Publication/Patent |

***Correlation is noted as "H" for High, "M" for Medium and "L" for Low**

**Mapping PSOs with POs**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PO13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PSO1** | **H** | **H** | **M** | **M** | **L** | **M** | **L** | **H** | **H** | **L** | **M** | **M** | **M** |
| **PSO2** | **H** | **H** | **M** | **H** | **H** | **M** | **M** | **M** | **M** | **M** | **M** | **H** | **M** |
| **PSO3** | **H** | **H** | **M** | **M** | **M** | **M** | **L** | **M** | **M** | **M** | **M** | **M** | **M** |

| ***Course Code*** | ***Course Title*** | ***Course Type*** | ***Credits*** | ***Prerequisite*** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **CO6** | **PSO 1** | **PSO 2** | **PSO 3** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BSFL1101 | English | Theory | 2 | NIL | H | M | | - | - | - | H | H | - |
| FCBS0101 | Environmental Science | Theory | 2 | NIL | H | M | | - | - | - | M | M | - |
| BSPH1101 | Mathematical Physics-1 | Theory+ Practice | 6 | $12^{th}$ class pass | H | H | | H | - | - | H | H | **H** |
| BSPH1102 | Mechanics | Theory+ Practice | 6 | $12^{th}$ class pass | H | H | | H | - | - | H | M | **M** |
| BSPH1201 | Thermal Physics | Theory+ Practice | 6 | $12^{th}$ class pass | H | H | | H | - | - | H | M | **M** |
| BSPH1202 | Waves and optics | Theory+ Practice | 6 | $12^{th}$ class pass | H | H | | H | - | - | H | M | **M** |
| BSPH2301 | Mathematical Physics II | Theory+ Practice | 6 | Mathematical Physics-1 | H | H | | H | - | - | H | M | **M** |

| *Course Code* | *Course Title* | *Course Type* | *Credits* | *Prerequisite* | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **CO6** | **PSO 1** | **PSO 2** | **PSO 3** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BSPH2302 | Electricity and Magnetism | Theory+ Practice | 6 | Mathematical Physics-1 | H | H | - | H | - | - | H | M | **M** |
| BSPH2303 | Analog systems and Applications | Theory+ Practice | 6 | $12^{th}$ class pass | H | H | - | H | L | - | H | H | H |
| BSPH2401 | Mathematical Physics III | Theory+ Practice | 6 | Mathematical Physics-2 | H | H | H | H | - | - | H | M | H |
| BSPH2402 | Elements of Modern Physics | Theory+ Practice | 6 | $12^{th}$ class pass | H | H | H | H | - | - | H | M` | - |
| BSPH2403 | Digital systems and Applications | Theory+ Practice | 6 | Analog systems and Applications | H | H | H | H | L | - | H | M | L |
| BSPH3501 | Quantum Mechanics & Applications | Theory+ Practice | 6 | Elements of Modern Physics | H | H | H | H | - | - | H | H | H |
| BSPH3502 | Solid State Physics | Theory+ Practice | 6 | Elements of Modern Physics | H | H | M | H | - | - | H | H | H |
| BSPH3601 | Electro-magnetic Theory | Theory+ Practice | 6 | Mathematical Physics-1 & 2 | H | H | M | H | - | - | M | M | M |
| BSPH3602 | Statistical Mechanics | Theory+ Practice | 6 | Studied semester I and II | H | H | H | H | - | - | H | M | M |
| BSPH3503 | Experimental Techniques | Theory+ Practice | 6 | $12^{th}$ class pass | H | H | H | H | L | - | M | L | L |
| BSPH3504 | Embedded systems- Introduction to Microcontroller | Theory+ Practice | 6 | Studied $1^{st}$ & $2^{nd}$ year | H | H | H | H | L | - | H | H | H |

| *Course Code* | *Course Title* | *Course Type* | *Credits* | *Prerequisite* | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **CO6** | **PSO 1** | **PSO 2** | **PSO 3** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BSPH3505 | Physics of Devices and Communication | Theory+ Practice | 6 | Studied 1st & 2nd year | H | H | M | H | L | - | H | M | H |
| BSPH3506 | Advanced Mathematical Physics-I | Theory+ Practice | 6 | Studied 1st & 2nd year | H | H | M | H | - | - | H | M | H |
| BSPH3507 | Advanced Mathematical Physics-II | Theory | 6 | Studied 1st & 2nd year | H | H | M | H | - | - | H | M | H |
| BSPH3508 | Classical Dynamics | Theory | 6 | | H | H | M | H | - | - | H | M | M |
| BSPH3603 | Applied Dynamics | Theory | 6 | Classical Dynamics | H | H | M | H | - | - | H | M | M |
| BSPH3604 | Communication System | Theory+ Practice | 6 | Studied 1st & 2nd year | H | H | M | H | L | - | H | M | M |
| BSPH3605 | Nuclear and Particle Physics | Theory | 6 | Studied 1st & 2nd year | H | H | M | H | L | - | H | M | M |
| BSPH3606 | Astronomy and Astrophysics | Theory | 6 | Studied 1st & 2nd year | H | H | M | H | L | - | H | M | H |
| BSPH3607 | Dissertation | Project | 6 | Nil | H | H | M | H | L | H | H | M | M |
| BSPH2001 | Physics Workshop Skills | Practice | 2 | Nil | H | H | H | H | - | - | H | M | M |
| BSPH2002 | Computational Physics Skills | Practice | 2 | Nil | H | H | H | H | - | - | M | M | M |
| BSPH2003 | Electrical circuits and Network Skills | Practice | 2 | Nil | H | H | H | H | - | - | M | M | M |
| BSPH2004 | Basic Instrumentation Skills | Practice | 2 | Nil | H | H | H | H | - | - | M | M | M |
| BSPH2005 | Applied Optics | Practice | 2 | Nil | H | H | H | H | - | - | M | M | M |